

FROZEN ASIA

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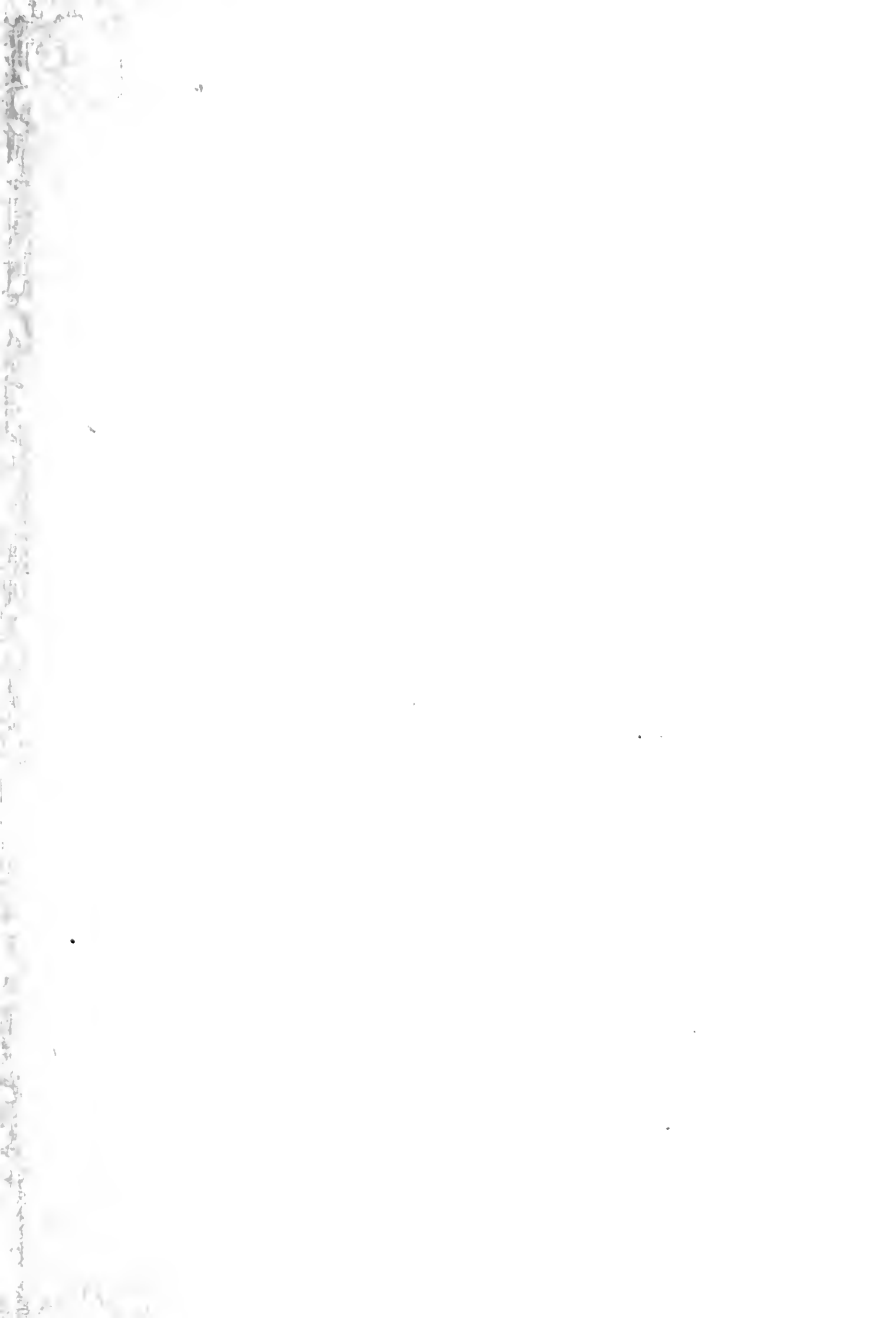
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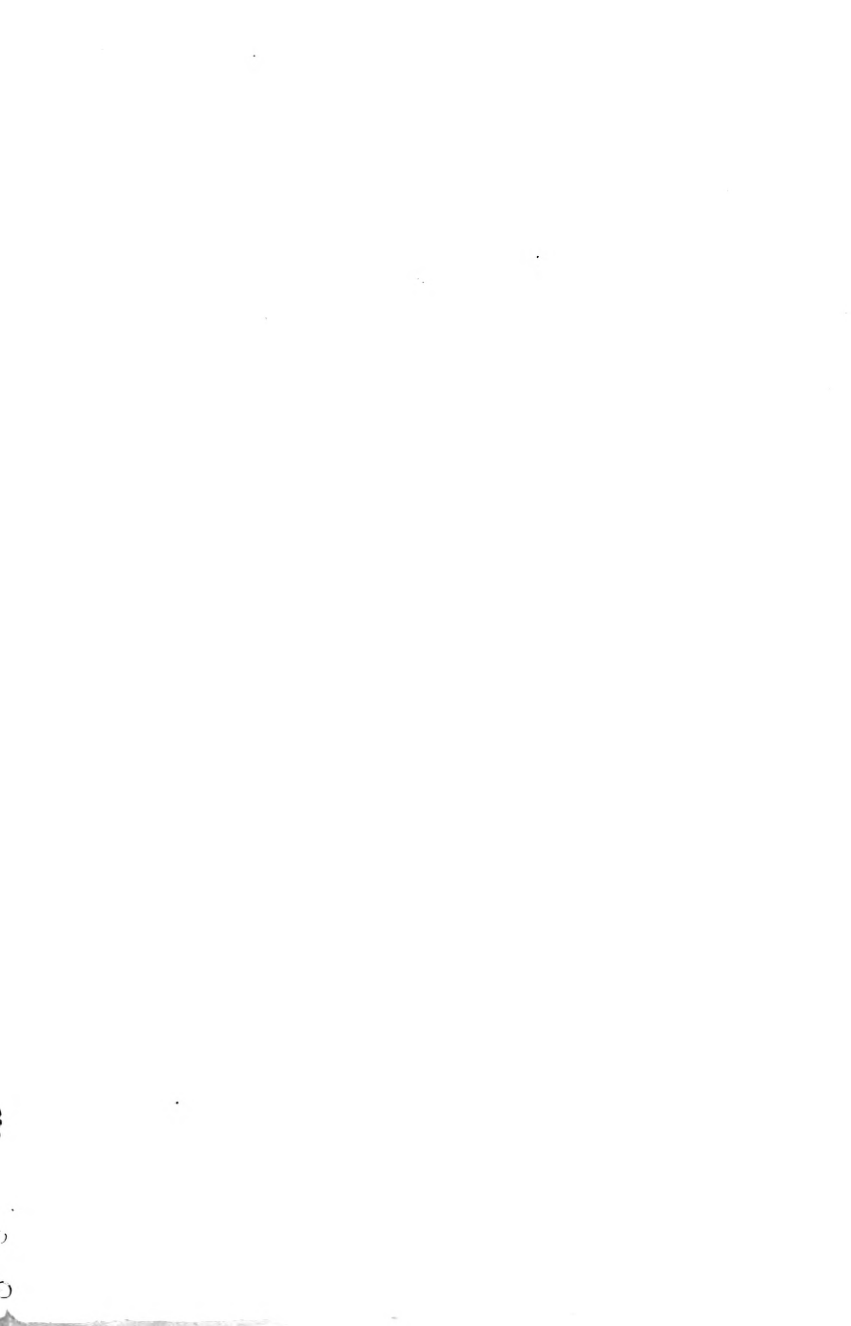
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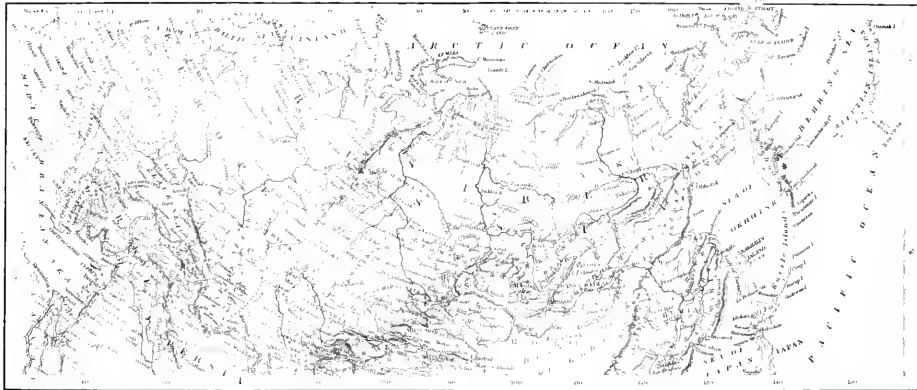
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FROZEN ASIA



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FROZEN ASIA:

A Sketch of Modern Siberia.

TOGETHER WITH AN ACCOUNT OF THE NATIVE TRIBES
INHABITING THAT REGION.

BY

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PREFACE.

IN the compilation of the following pages, I have been guided rather by a desire to awaken an interest in the reader regarding Frozen Asia, than by any hope of producing a volume that could in any way pretend to deal commensurately with so vast a subject. Limited in space, I have endeavoured to select such matters as I thought would prove of general interest, but I deeply regret the inexorable necessity that has precluded my entering at length into many interesting subjects, now left wholly untouched, or pencilled in the merest outline. I have to tender my hearty thanks to my friend Mr. William W. Waddington, of Brazenose College, for the great assistance he has rendered me throughout my task. To his pen I am indebted for the geological sketch of Siberia, and for the Samœide folk lore stories, as well as for many valuable hints and suggestions throughout the whole of the work. To Professor Owen I must express my gratitude for the kindness with which he met my inquiries concerning the mammoth, and I am much indebted to Mr. John Carrick Moore for information on the same subject. To Messrs. Bates and Rye,

of the Royal Geographical Society, are also due my best thanks for the facilities they so kindly afforded me in writing the section on "Modern Exploration." Lastly, I must acknowledge my debt to the Rev. Edmund McClure, who first brought the Samöeide stories under my notice. I may mention that the geographical nomenclature followed in this volume is that adopted by Mr. Stanford; but in all quotations I have rigidly respected the text of the several authors.

C. H. EDEN.

LONDON, *Jan.* 10th, 1879.



FROZEN ASIA.

CHAPTER I.

GEOGRAPHICAL FEATURES.



PROPOSE, in the following pages, giving a brief account of that vast expanse of country, which, comprising the whole of Northern Asia, is known to us under the name of Siberia. After sketching its geographical and geological features, its flora, fauna, and such other matters relating to its natural history as I judge may prove of interest to the general reader, I shall touch upon the varieties of race to be found amongst its inhabitants, their religions, manners, customs, and amusements, and I shall insert several of the fanciful stories which may serve as specimens of the folk lore existing amongst the heathen population of the desolate tundras—wild legends replete with improbability, but highly interesting as exemplifying the belief in magical agencies still rife amongst these people.

I shall next notice the mode in which Russia—then little advanced beyond a state of semi-barbarism—obtained a footing in this land, and the steps taken by that power to secure her new dominion, and consolidate her power therein; a page of history that in romantic interest may vie with the exploits of Cortes in Mexico, or of Pizarro in Peru, although happily unstained by the cruelties that sullied the achievements of the *conquistadores*. Blood was shed freely by the Muscovites—few territorial acquisitions are made without doing so—but I find no record of unnecessary severity practised on the natives, or of any attempt to coerce them by persecution, or other harsh measures, to adopt the religion of their conquerors. The subject tribes were reduced to a state of servitude, but the yoke of their new masters was comparatively an easy burden, and beyond maintaining order and exacting a heavy tribute, the dominant race interfered little with the people they dispossessed.

The space at my command precludes my entering into the attempts made by Western nations to force a north-eastern passage, and to penetrate to distant Cathay through the icy barrier of the Frozen Ocean, but I shall refer at length to the recent efforts made by enterprising men to open up a water communication between Europe and the mighty rivers that flow into the Arctic Sea from the very southern confines of Siberia—

adventurous undertakings that have been crowned with the success which usually waits upon energy and indomitable perseverance. In conclusion, I shall endeavour to draw a picture of "Frozen Asia" as it is to-day.

Siberia is commonly regarded by the mass of our countrymen as a sterile inclement wilderness, rich in certain ores, and in animals producing the costly furs by which the wealthy seek to protect themselves from the rigours of winter; but beyond this—and the sinister celebrity which has attached itself to the country as forming a Russian penal settlement, where captives are popularly supposed to undergo sentences of merciless severity and life-long duration—beyond this, little is known concerning a land fraught with interest alike to the student of science, and to the enterprising merchant seeking a new field for extended commercial relations. I trust to show that this neglect of ours can no longer be excused, and that a closer acquaintance with Siberia will awaken an interest amply repaying the pains bestowed on the investigation. From the date when the Cossacks first pushed eastwards into the sparsely-peopled solitudes of Northern Asia, its modern exploration may be said to have commenced, and within three generations the grandsons of these adventurers had planted their flag on the shores of the Pacific. Neither was it long before the Russian Government recognised the value of their newly-acquired

provinces. The lucrative traffic with China, the discovery of rich mines, and the importance of opening out routes to, and securing the sea-board of, the Pacific, led to the establishment of numerous settlements, from whence researches were pushed forth in every direction. Nor did they disdain to supplement native energy by the enlistment of foreign aid, more particularly in the domain of scientific exploration. At various times Britain, Holland, Sweden, Germany, France, and the United States have each furnished contingents in furtherance of this object, and already the results of their investigations have proved most valuable. That an increased intimacy with distant nations should be established—smoothing the path whereby the glad tidings of great joy are carried abroad, and tending to unite all races in the bonds of Christian brotherhood—is in itself no slight result ; but laying matters of such deep import entirely aside, and considering the subject only from a worldly point of view, it may without exaggeration be said that there is no branch of human knowledge which has not been both benefited and augmented by the labours of these earnest explorers. Ethnology has occupied the attention of one party ; ornithology and botany that of a second ; the laying open new fields for commercial enterprise has taxed the energies of a third ; but all have striven manfully, and

in their different spheres added to our knowledge of this distant realm. The reader who turns over a recent volume of any of our scientific journals will at once see the attention which is now bestowed upon Northern Asia ; and although the information that I am able to present in this volume is limited, I trust to awaken the interest of all who may do me the honour of reading these pages, so far as to incite them to watch the progress of discovery in that quarter of the globe, and to fill in for themselves the outline that I have here traced. A clear knowledge of the extent and position of the country under consideration being essential in a volume of this nature, I shall commence with an account of the geographical features of the region with which we are now concerned.

That part of the continent of Asia which extends eastward from the Ural (pronounced Oo-rál in Russian) Mountains to the Pacific Ocean, and from the Arctic Ocean on the north to the boundaries of the Chinese Empire and Turkestan in the south, is called Siberia. Its western boundary is continuous with Russia in Europe, the empire to which it belongs ; and on both the north and to the east we find that Nature has placed the sea as an insuperable barrier to its further extension. But to the southward it is far otherwise. There the Muscovite dominions join the frontiers of the Chinese

Empire, and the territories of numerous small principalities or Khanates, which are becoming slowly but surely absorbed as their inhabitants are brought into contact with their powerful neighbour. The exigencies of statecraft, and the strong proselytising spirit inherent in the members of the Orthodox Greek Church, both contribute to bring about a result which history shows us must inevitably occur when civilisation and barbarism are brought into close communion; the weaker must yield—must be displaced in accordance with the dictates of an immutable law which peremptorily forbids their co-existence.

Nor is it a result to be deplored. The civilising influence of Russia may leave much to be desired, but no one can deny that it is a grand advance on the savagery and heathenism at present existing throughout many of the Central Asian Khanates. If Christianity does not reach these people precisely in the form that we should wish, still some of its beneficent influences are brought to bear upon them—*some* rays of light are admitted where all has hitherto been darkness.

Into any considerations of the justness of this absorption of lesser states by a greater, and of the political complications arising therefrom, I shall not enter, my object being gained when I have pointed out the differences that each year makes in the southern boundary of Siberia, involving an advance of frontier

that only a map of large dimensions could explain minutely. Thus, in preference to stating each turn and bend of the ever-shifting line of demarcation between Russia in Asia and her neighbours, a plan which would probably weary the reader unacquainted with that little-known locality, I content myself with saying that, roughly speaking, Siberia is bounded on the south by Turkestan and the Chinese Empire, a definition answering all practical purposes, as this volume will treat chiefly of the northern portion of Russia's Asiatic territory, reserving Khiva, Bokhara, and the other Khanates for another occasion.

Siberia lies (roughly) between the 45th and 77th parallels of north latitude, and extends from the 60th to the 190th degree of east longitude. Its most northern point is Cape Severo, or North-East Cape, a tongue of land between the estuaries of the great rivers Yenisei and Lena; Cape Vostotchni, its eastern extremity, is distant only forty-eight miles from Cape Prince of Wales in North America, from which it is separated by Behring Strait. Its greatest length from East to West is about 3,600 miles, and its greatest breadth from North to South a little less than 2,000 miles, forming an area which exceeds that of Europe by more than one million square miles.

An almost unbroken uniformity of surface charac-

terises nearly the whole of this vast tract of country. Bordering on the Arctic Ocean, which except for a few months in the year is frozen, lies the Great Northern Plain, the largest level expanse of land on the face of the globe, which, embracing nearly the whole of Northern Asia, advances eastward into Europe, reaching to the mainland opposite the coast of Great Britain. It is stated that a traveller departing from London and journeying eastward between the 52nd and 53rd parallels of north latitude as far as 85 E. long., and from thence between 55 and 56 N. lat. would arrive on the banks of the river Lena, in long. 130 E., without encountering any mountain range except in one place, near the Ural River, where a chain of hills rises to a height never exceeding 2,000 feet. This unbroken journey would have extended over one-third of the curvature of the entire globe. Indeed, the Great Northern Plain would extend from the Atlantic to the Pacific Oceans, had Nature not planted at its two extremities barriers which protect it against the encroachments of the sea. The Scandinavian Mountains form its western boundary, whilst at the east, with which we are chiefly concerned, arise the Stanovoi Mountains, which run from the eastward of Lake Baikal to Behring Strait, following a north-easterly direction. Throughout the whole length of the Kamtchatkan Peninsula runs a

range containing some twenty active volcanoes, the loftiest of which—Kliuchev—attains an altitude of 16,131 feet. The fact that the mountains terminating both extremities of the Great Northern Plain are actively volcanic—for Iceland may be included in the Scandinavian Range—is worthy of notice.

To bring the surface features of Siberia more closely home to the reader I follow the plan adopted by many geographers, and divide the whole country into three parts, namely :—Western, Central, and Eastern Siberia.

The first-mentioned, which lies between the Ural Mountains and 85 E. long., consists of one unbroken plain, which may be divided into five regions :—The *Steppe*, which extends from the south to the 55th parallel ; the *Agricultural District*, stretching from thence to 60 N. lat., a tract of country well-watered and very fertile ; the *Mining District*, embracing the south-eastern part of Western Siberia, and including a portion of the Altaï Mountains ; the *Wooded Region* lying north of the latter, unadapted to cultivation, the whole extent being clothed with varieties of the pine and fir species, amidst whose gloomy forests the fur-bearing animals find a home ; and the *Tundra*, the most northerly portion of Western Siberia, a low level plain, destitute of trees, where the uniformity of the landscape is unbroken, save by a few stunted bushes cropping up from the

moss-covered surface, that are barely able to extract the means of existence from the frozen soil.

Central Siberia is situated between 85 and 105 E. long., and includes the greater portion of the Altaï Mountains; the hilly country east of the Obi River; the valley of the Upper Yenisei; the Plain of the Lower Angara River; the Wooded Region; and the Tundra. *The Hilly Country* extends to the banks of the Obi, which separates it from the Steppe of Baraba, and is almost entirely covered with fir-trees, the cones of which form an article of commerce with the more western countries; the soil, however, being sandy but little cultivation is possible. East of the river Tom the country improves, spreading out into a table-land intersected by numerous rivers with depressed bottoms, where the soil is fertile and the villages, in consequence, numerous. To the northward of this runs the river Ket, which marks the limit of cultivation in this district. *The Valley of the Yenisei*, being inclosed by mountain ridges, was considered at one time the warmest, as well as the most fertile part of Siberia, but many travellers now award the palm to the land in the vicinity of the Obi. Westward of the Vale, between the 88th and 89th degrees of E. long., rise the Teletskoi Mountains; to the southward lie the Mountains of Sayansk, uniting the Altaï Mountains to the range called Erghik Targak Taïga, and separating

Siberia from the Chinese Empire ; this chain extends northward to the town of the same name (Sayansk), the Yenisei flowing through it by a long and narrow gorge. The Vale of the Yenisei covers about 350 miles from north to south, and 200 from east to west, of which area one-half is occupied by mountains. The river flows through a broad flat containing an alluvial deposit of from two to three feet in depth, and of great fertility. Cereals here grow abundantly, and the higher ground being well watered, is covered with a rich turf throughout the year on which many cattle are depastured, the mildness of the climate proving favourable to stock-raising. The wild hemp, wild flax, wild Siberian buckwheat, and many other useful plants are indigenous to the bottoms of the Yenisei, and the inhabitants are careful to utilise them in various ways. *The Plain of the Lower Angara River* lies to the eastward of the southern portion of Central Siberia, and consists of a gentle incline sinking towards the north, and in that direction traversed by several rivers which flow into the Lower Angara and Upper Tunguska. The surface is diversified, hills of moderate height alternating with extensive level valleys. The former are unreclaimed, being covered with forests of fir and birch, but in the latter rye, oats, hemp, and tobacco are successfully cultivated. The cold in this region is very severe, the mean annual temperature being beneath

freezing point, but owing to the dryness of the atmosphere the snowfall is inconsiderable. The wandering tribes that inhabit this tract maintain themselves chiefly by hunting, and collecting furs, the elk, mountain-goat, lynx, and sable being plentiful ; this is the northern limit of the camel as a domesticated animal. Northward of the rivers Upper Tunguska and Ket lie the *Wooded Region* and the *Tundra*, the latter of which extends to the Arctic Ocean.

Eastern Siberia comprehends the whole of the country lying to the eastward of 106° E. long., and is equal in size to both Western and Central Siberia united. Owing to the greater elevation of portions of its surface and the severity of its climate, this vast tract contains a far smaller portion of land fit for agricultural purposes than either of the other divisions, and consequently possesses less interest in many respects. Between the Chinese frontier and the town of Okhotsk the coast is rugged, steep rocks rising abruptly from the sea to the height of 3,000 feet, which may be considered as the general level of the country extending westward from the sea—southward of the 60th parallel—to the meridian of the town of Yakutsk, and thence in a south-westerly direction to the shores of Lake Baikal, the vale of the Lena forming its northern boundary in this part. The surface is a succession of flat plains, separated from each other by small ridges or narrow tortuous valleys, forming

a region utterly useless for agricultural purposes, and apparently equally unadapted to pastoral pursuits, the surface being covered with fir, birch, and other trees, and dotted with lakes surrounded by high hills, which are frozen nearly the whole year round. This region is characterised by the length and severity of its winters, and is a dreary inhospitable waste, incapable of improvement, and serving only as a hunting ground for wandering tribes of hardy Tunguses, who find in its valleys flocks of reindeer and the argali or wild sheep. At the south-western extremity of this wilderness lies Lake Baikal. The most southern portion of Eastern Siberia is divided by a range of mountains into two parts,—the valleys of the rivers Selenga and Shilka, the former ^{of} which falls into Lake Baikal, the latter into the Amur, of which it forms one of the principal tributaries. The larger portion of the basin of the Selenga lies east of the river and consists of three valleys, the upper parts of which are too cold for cultivation, but in the lower, agriculture has been successfully followed. The valley of the Selenga itself is arid and unproductive, but its slopes furnish good pasture land. Some ten miles from its mouth, the river enters a level plain extending for a considerable distance along the shores of Lake Baikal, above which it is slightly elevated. The western portion of the basin of the Selenga consists of a plain, whereon numerous herds of horses

and cattle are depastured by the Buriates, to whom the country belongs. The forest-clad mountains east of the river abound with wild animals, such as bears, wolverenes, elks, deer, wolves, sables, wild goats, and many others. The portion of Eastern Siberia drained by the Shilka, may be considered an entirely mountainous region, with open valleys capable of cultivation. Its southern part is known as the Steppe of the Kerulen, and has a flat surface quite unfitted for agricultural purposes, but strewn with small stones, amongst which are found beryls, topazes, and jasper; and the neighbouring mountains are rich in silver, tin, lead, and zinc, all of which are worked. The Upper Valley of the Lena constitutes one of the agricultural districts of Eastern Siberia, cereals and vegetables thriving as far north as the town of Yakutsk; the islands with which the bed of the river is thickly sown, and the low banks, are covered with the willow, poplar, and birch; whilst the openly wooded country affords nourishment to the flocks of the Yakutes. The richest pastoral tract in the district lies round the town of Yakutsk, and innumerable herds roam over the low country which extends from the Lena eastward to the river Aldan. Another extensive sweep of pasture land is found on the river Vilui, one of the tributaries of the Lena. The whole country east of the Aldan is mountainous, extending some two hundred miles east to the vicinity of the

Pacific ; at its most elevated part it attains an altitude of nearly 2,500 feet, and affords a hunting ground to the wandering Tungoses. At the northern extremity of the Aldan Mountains is a group, from which two chains take off. One—called by the Russians Stanovoi Khrebet—runs, first east, and afterwards north-east, parallel with the coast. In long. 164 E., at the source of the river Anadyr, this chain divides, one branch taking a south-easterly course and then bending further south, forms the back-bone of the peninsula of Kamtchatka ; the other extends north-east in the direction of Behring Strait, terminating in East Cape. The other chain taking off from the group at the extremity of the Aldan Mountains, pursues at first a north-westerly direction, but afterwards bends more to the west and runs parallel to the Aldan River and to the Lena until it terminates in lat. 67 N. Between the Lena and the Kolyma—the latter a considerable river flowing into the Arctic Ocean in long. 160 E., after preserving a general north-east direction—the country is traversed by small mountain chains of slight elevation but of considerable width, which run north and south, and are clothed with stunted forest trees. Between these lie extensive level plains interspersed with small sheets of water containing plenty of fish, and having tolerable pasture on their banks. The wide flat valleys known as “dry lakes” (*albuti*) are her

found, and afford rich feed to the flocks of the Yakutes. They are a peculiar feature in Siberian geography, consisting of slight depressions in the surface of the plain, which, during the inundations of the large rivers become filled with water, which remain there until the frosts of winter burst the earth and form innumerable fissures through which the water escapes, when in the following spring a rich luxuriant vegetation arises throughout their beds. Along the polar sea runs the tundra common to the three geographical divisions of Siberia. This expanse of desolation is thus described by Baron von Haxthausen :—

“The entire northern coast of Siberia, extending along the shores of the Arctic Ocean for nearly four thousand miles in length, and 130 to 450 miles in breadth, is, as far as we know, a swamp, overgrown with moss and lichens, upon which neither man nor beast could set foot in summer, did not the ground remain perpetually frozen to a depth of several hundred feet, whilst in summer it thaws a little more than a foot deep. These districts are named *Tundras*, a Finnish word, it is said, adopted by the Russians. The isolated dry Tundras are always covered with lichens, and the wet ones with moss. Wahlenberg maintains that the dry lichen-soil is so much heated in summer, that the feet can hardly bear to tread upon it.”

Another traveller* gives a graphic description of this wilderness. "By four o'clock the next morning we had renewed our journey, taking an easterly course from the yourt, over a vast barren tundra, leaving all traces of vegetation behind us. The snow of the tundra, having been subjected to the warm rays of the sun for several days, presented a glassy surface, from which the reflected sunlight shone with such dazzling brilliancy that in a few moments our whole party was nearly blinded, and we were compelled to revert to our goggles for protection. Even these hardly sufficed to shield our eyes, and it was only with pain that we could look upon the snow at all. Our drivers were even less fortunate than we, as they were compelled to keep their eyes open in order to direct the dogs, and their protectors were not as effectual as ours "

"After two hours' travel the dark line of timber had entirely vanished in the distance behind us, and we found ourselves wending our way over the trackless waste, which extended on all sides in undulating sweeps, bounded only by the horizon. The dreary solitude and awful silence that reigned over this rigid, lifeless expanse produced a feeling of strangeness that I could not overcome—a feeling as if some dread calamity was about to be launched

* Mr. Richard J. Bush, late of the Russo-American Telegraph Expedition.

upon us. I experienced a longing sensation, and felt that if I could only see some motion, if nothing more than the fluttering of a dry leaf, or if a dead, knotty stump would only present itself jutting from the snow, how great a relief it would be ! But no ; there it lay, cold, stark, stiff, and motionless, the very corpse of Nature, over whose lifeless form we were noiselessly picking our way. For more than two hours I did not hear a word spoken, or a sound from man or beast. All seemed to be under the influence of the spell."

The country between the rivers Kolyma and Indijirka resembles in character the rolling prairies of North America ; long low swells running north and south, and terminating in bluffs upon the Arctic Ocean, render the coast in that part alternately high and low. This tract has numerous lakes scattered over its surface, and on the fish afforded by these and the rivers, the few inhabitants of this inclement region entirely subsist. East of the Kolyma the country alters. On that side the spurs of the Stanovoi Range approach the river, rendering its banks precipitous, and mountain ranges, attaining an altitude of 3,000 feet above the sea, rise in every direction, and in several places reach the sea, forming Capes Baranov (Sheep), Shelagskoi, and Sieveroi or North Cape, so named by the circumnavigator Cook in 1771. Between these elevated bluffs the coast is low and the

country inland of the character already described as Tundra. The forests clothing this mountainous tract abound with reindeer, bears, elks, and sables ; the surface of the Kolyma and its tributaries is covered with wild swans, geese, and ducks ; whilst the rivers themselves yield an abundant supply of fish, the most common species being the herring. The extreme north-east portion of the Asiatic continent is sterile in the highest degree, consisting of rocky ranges and valleys destitute of all vegetation except the moss on which the reindeer browse. In this barren waste dwell the Tschuktschis, subsisting by the chase and by the produce of their herds of tame reindeer.

We now pass on to Kamtchatka, the peninsula running nearly due south from the north-eastern extremity of Asia. It lies between 51 and 63 N. lat. and 155 and 165 E. long., having a length of 800 miles, and a breadth varying from 30 to 120 miles. Its total area is estimated at 80,000 square miles.

Cape Lopatka, in lat. 51 N., the southern extremity of Kamtchatka, is a low narrow tongue of land, which spreads out as it proceeds northward, rising into rocky and barren hills with small valleys timbered with willow and stunted birch. Two degrees north of Cape Lopatka the range divides, one portion running due north, the other taking a north-easterly direction, and in the fork formed by these two chains lies the valley of the river

Kamtchatka. The western chain has been mentioned above as forming part of the eastern branch of the Aldan Mountains ; and is of inconsiderable altitude, rarely rising above the tree-line (3,000 feet) ; but the eastern range has many high mountains entirely of volcanic formation, amongst which are five or six in a state of almost uninterrupted activity. These volcanoes are said to constitute the northern extremity of that extensive series which incloses the eastern coast of Asia, and, traversing the islands of Japan and the Philippines, probably has a connection with another series of volcanoes which traverse the Sunda and Molucca islands from east to west.*

Only a few of the most prominent peaks of either of the Kamtchatdal ranges are named. On the east the mountains approach close to the sea-coast, which is composed of high rocks and rugged cliffs, together with bold promontories which form numerous inlets, useless to the navigator from their entrances being blocked up with reefs. Avatcha Bay, whereon stands the small town of Petropaulovsk, is an exception to this rule, affording a good sheltered anchorage to shipping. Earthquakes are of frequent occurrence in this district.

The western portion of the Kamtchatdal coast skirting the Sea of Okhotsk is generally low and sandy, producing only willow and mountain-ash, with scattered patches of

* "English Cyclopædia." Art. Kamtchatka.

stunted birch ; towards the north reindeer moss appears in great quantity.

The Kamtchatka is the only river in the peninsula that merits notice. It flows for a distance of 300 miles, and debouches in a large shallow bay, exposed to the full violence of all easterly winds. The rivers flowing into the Sea of Okhotsk are insignificant, the largest amongst them having only six feet on the bar at low water, and the sea running shallow to a considerable distance.

The climate, though severe, is much milder than in the eastern parts of the mainland, indeed one traveller* goes so far as to say that "the vegetation has an almost tropical freshness and luxuriance, totally at variance with all one's ideas of Kamtchatka." The frost sets in about the middle of October, but up to December the temperature rarely falls below ten degrees of freezing point ; in exceptionally severe winters the thermometer has been known to indicate —25, but such an occurrence is rare.

From all quarters we hear praises of the Kamtchatdal scenery. The writer quoted above says, "The central and southern parts of the peninsula are broken up by the spurs and foot-hills of the great mountain range into deep sequestered valleys of the wildest and most picturesque character, and afford scenery which, for majestic and varied beauty, is not surpassed in all Northern Asia."

* "Tent Life in Siberia." By George Kennan.

Agriculture was introduced into the peninsula of Kamtchatka, by the Russians, about the middle of last century. In the vale of the main river many vegetables are grown, and both horses and cattle thrive and increase. The native inhabitants form two distinct tribes, the Kamtchatdals and the Koriaks, the former a short stout race, with large heads, flat faces, prominent cheek bones, thin lips, and flattened noses ; the latter, chiefly hunters and fishermen, differ from their neighbours in the smallness of their heads, and inhabit the northern portion of the peninsula, together with a part of the continent. Both tribes have many curious customs, but these I shall describe further on. The population of the whole region is estimated by Mr. Kennan at 5,000.

I now proceed to give a slight geographical sketch of the territory through which the Amur flows, and of the recently acquired Russian district to which it has given its name.

The Amur, Amoor, or Sakalin river, one of the largest streams in Asia, rises in lat. 50 N., and long. 110 E., and after draining an immense tract of country falls into the sea opposite the northern extremity of the island of Taraki, formerly known as Sakalin or Krafsto. To record its winding course, and its junction by numerous tributaries, would occupy more space than I have at my disposal, I shall therefore content myself with describing

its course from the junction of the great river Shilka at a spot in lat. 53 20' N., and long. 121 30' E., called Ust (E) Strelka, at which point the Russians bestow upon it the name Amur, a word adopted from the 'Tungooses, in whose language it signifies "The Great River," or "The Great Water." The Manchu 'Tartars continue still to call it Sakalin-Ula, or "The River of Black Water."

From Ust Strelka the Amoor runs between the Russian territory on the north and Northern Manchuria, bending in an arc towards the south as far as lat. 47 30' N.; then turning in a north-easterly direction which it roughly pursues until it reaches the sea. The whole length of this noble stream is estimated at 2,400 miles, throughout the greater portion of which it is navigable, although the sand and mud which fills its estuary renders the ascent difficult for the first forty miles. The Russians have surveyed the river accurately and planted wooden triangles on the bank as sailing marks, which are painted white, and thus show out distinctly against the background of dark fir-trees. Nevertheless Captain Bax, who recently proceeded up the Amur in H.M.S. *Dwarf*, says, "The channel is very narrow and intricate; even for a vessel drawing only eight feet and a half of water, it was necessary to be very careful in keeping the marks exactly on to prevent grounding."

For more than two hundred years the Russians, seeing

the great advantages that the possession of this river would afford them, had endeavoured by every means in their power to establish a footing on its right, or southern, bank; but their encroachments were always steadily resisted by the Chinese, and for many years a constant petty warfare was waged on the frontier between the two empires. At the commencement of the present century efforts were made to render the navigation of the Amur free, but the Chinese would make no concession, and the negotiations fell through. So matters remained until 1850, when a Russian exploring expedition ascended the river, and in the following year two trading ports, Nicolaievsk and Marinsk were established, the latter on the south side of the stream. During the Russian war of 1854-5-6, a Russian squadron took refuge in the Amur, and seized the opportunity to strengthen their positions on its banks. Peace left them at liberty to continue their endeavours, and in 1858 China, weakened by the war then going on between herself and Great Britain and France, concluded a treaty favourable to the Russians, whereby many commercial advantages were conceded to them. After the defeat of the British on the Peiho, the Chinese Government repudiated this treaty, but, on the seizure of Peking by the allies, the Russians again pressed their claims, and this time obtained an augmentation of territory that under other circumstances they could hardly

have hoped for. By a treaty concluded on November 14th, 1860, between Russia and China, the eastern boundary of the latter was settled to commence at the junction of the Shilka with the Argun (Upper Amur), following the river from that point to the junction of the Usuri, the left (northern) bank being conceded to Russia. "The boundary then ascends the Usuri, all on the right bank belonging to Russia, to the Lake of Kingka, crosses the lake, ascends the Belen-ho, trending back to the north-west, skirting the mountains between Hun-chun and the sea, so as to include Korea, and resting upon the river Tiumen, about seven miles from the sea. Thus a territory larger than the United Kingdom has passed from the one monarchy to the other; a territory possessing the whole coast of the Channel of Tartary, with several good bays. In addition, the island of Saghalien, which stretches from north to south along the coast, was made over to them, except the southern end, which as yet belongs to Japan,* being separated by a narrow strait from Yeso."† This portion, however, now acknowledges the sway of the same rule, having been ceded by treaties signed within the last few months. The country thus acquired belongs to the Government of Eastern Siberia, and is known as the Amur Territory and Maritime Province.

* Surrendered to Russia, January, 1879.

† "English Cyclopædia," Supplement. Art. Amur.



CHAPTER II.

MOUNTAINS, RIVERS, AND LAKES.

HAVING briefly described the general geographical features of Siberia, I now proceed to notice the mountain ranges, indicating their general direction, and tracing the course of the principal rivers, which arise amongst them, and drain the entire northern portion of the Asiatic continent. Such a sketch must necessarily be confined to a mere outline, but I hope, nevertheless, to bring the physical features of the region, together with its most prominent characteristics, to the reader's notice in an intelligible, if simple, form.

Considered as a whole, Siberia may be said to contain only two mountain ranges of great extent, the Ural and the Altaï Mountains, and of these the former, strictly speaking, hardly merits the name of a "range," its altitude being inconsiderable and the slopes on either side so gentle that in many places the traveller is puzzled to know at what point the plain ends and the mountains

commence. But from the fact of the Ural Mountains forming the boundary between Europe and Siberia, together with the mineral treasures that they contain, a description of them becomes necessary in these pages.

The Ural chain extends north and south, from the country between the Caspian and the Sea of Aral, to the Kara Sea, and reappearing—though under another name—in Novaia Zemlia, continues to the northern extremity of that island, a distance exceeding 1,700 miles in length. Its southern portion does not surpass the Vosges in altitude, but is a pastoral country about 100 miles in breadth, consisting of parallel and longitudinal swells, the highest of which does not rise above 3,500 feet; in these ridges diamonds are found. The portion of the chain running northward from the sources of the Petchora is more elevated, having an average height of over 3,000 feet, and containing several peaks, amongst the loftiest of which are Konjakovsky, 5,397 feet, and Toll Poss, 5,250 feet; but no part of the range is permanently covered with snow. Mrs. Somerville, in her *Physical Geography*, tells us “Throughout the Ural Mountains there are neither precipices, transverse gorges, nor any of the characteristics of a high chain; the descent on both sides is so gentle that it is difficult to know where the plain begins; and the road over the chain from Russia by Ekaterinburg is so low that it hardly seems to

be a mountain Pass. The gentle descent and sluggishness of the streams produce extensive marshes along the Siberian base of the range."

The chain is composed of crystalline and metamorphic rocks, granite, gneiss, porphyry, and micaceous schists ; its mineral riches are very great, consisting of gold, platinum, magnetic iron, copper, and coal, most of which are found on the eastern or Siberian declivity. Further particulars concerning the mines of the Ural will be given in another place.

The Altaï Mountains, or more properly speaking the Altaï System, is the range forming the northern margin of the great Central Asian table-land, and extends in a serpentine line, and under various names, from the eastern bank of the river Irtysh to the Sea of Okhotsk and to East Cape in Behring Strait. It was at one time thought that this chain was connected with the Ural Mountains, but it has been ascertained beyond doubt that many hundred miles of low marshy country, as well as the Kirghiz Steppe, separate them, and they are now regarded as totally distinct ranges. The breadth of the chain is not accurately known, as to the south it traverses countries belonging to the Chinese Empire, as yet unsurveyed by Europeans ; but in the maps at Peking it is inserted as extending further to the south than to the north, in which case at one point it would cover some twelve

degrees of latitude—from 45 to 57 N.—a distance equal to the entire length of England and France from north to south. Its breadth has been ascertained to vary considerably, geographers say from 1,000 to 400 miles, and near the 105th meridian it contracts to 150 miles. Its entire length is about 4,500 miles, the term *Altai* being applied only to the portion lying west of long. 86 E. This part consists of a succession of terraces with swelling outline, descending in steps from the table-land, and terminating in promontories on the Siberian plains; on these terraces are numerous large lakes. “The general form of this part of the chain is monotonous from the prevalence of straight lines and smooth rounded outlines—long ridges with flattened summits on small table-lands not more than 6,000 ft. high, which rarely attain the line of perpetual congelation; snow, however, is permanent on the Korgon table-land, 9,900 ft. above the sea, supposed to be the culminating point of this part of the chain. These table-lands bear a strong resemblance to those in the Scandinavian Mountains in barrenness and sterility, but their flanks are clothed with forests, verdant meadows, and pastoral valleys.” *

East of the 86th meridian the chain divides into three ranges, inclosing extensive valleys between them. The Sayansk and Tannu-ola Mountains, which form the

* “Physical Geography.” By Mary Somerville.

northern and central ranges, unite in a mountain knot to the west of Lake Baikal, rich in mineral wealth. The third range runs to the south of Lake Ubsa.

Geologically the Altaï Mountains have been described as a rocky promontory projecting from the primitive formations which constitute the table-land of Chinese Tartary, into the alluvial deposit of the great Siberian plain. Rocks of the Palæozoic series not yet classified form the greater portion of the range. Clay slate, chlorite slate, and mica slate abound in the upper districts ; and through these granite, gneiss, syenite, porphyry, and greenstone have forced their way, whilst carboniferous limestone and sandstone, rich in fossil remains, are also found.

The two pillars of Katunya, rising to nearly 13,000 feet, are the highest known peaks of the Altaï, and in their vicinity the scenery is described as most imposing, stupendous rocks and glaciers existing in the unfrequented solitudes of the range.

Southward of Lake Baikal the Altaï chain is known as the Dauria Mountains, which consist of several parallel ranges ; further east they take the name of Yablonoi Khrebet, and under this appellation continue to the Sea of Okhotsk ; whilst from the Yablonoi springs the Stanovoi Range, which, running north-east, terminates with the continent at Behring Strait.

I now turn to the rivers of Siberia, amongst which are

numbered some of the largest and most remarkable in the world, both from their size and volume, as well as for the great distance throughout which they are navigable, their waters affording an easy communication from the more favoured southern regions, where Nature permits cereals and other produce essential to mankind, to flourish, and the inclement northern wilds or the more desolate tundra. It is worthy of remark that the principal Siberian rivers pursue a course that may be roughly called due north and south, whereas their largest and most important tributaries run east and west, the whole forming a gigantic water system unequalled throughout the globe.

The larger rivers, the Obi, Yenisei, and Lena, drain the country lying between the Central Asian table-land and the Arctic Ocean; I commence with the first-named, which is closer to Europe than its sister streams.

The Obi, Oby, or Ob, is the largest river of the Old Continent, having a total length of nearly 3,000 miles, and draining an area computed at 1,300,000 square miles. This tract, the basin of the Obi, extends from lat. 47 to 74 N., or nearly 1,900 miles in length; and in the widest part (lat. 55 N.), it is 1,200 miles across, comprehending an expanse of country only inferior in size to the Valleys of the Amazon and La Plata in South America. The Obi takes its rise in the defiles of the Altaï Mountains, those streams which descend from the

northern declivity of the range running into the Obi, those on the western into the Irtysh. The latter rises in Mongolia, and is really the main branch of the river. From its source it runs westward to Lake Zaizan, a sheet of water 1,700 feet above the level of the sea, and 200 miles in circumference. Issuing thence it follows a general north-west course, past Semipalatinsk, Omsk, and Tara, to Tobolsk, where it receives the waters of the Tobol, which is fed from the Ural Mountains. At Tobolsk the Irtysh turns north, which direction it maintains until its junction with the Obi, when the joint stream continues northward, receiving numerous tributaries from the Ural Mountains and the country lying east of its course, and increasing in magnitude until it falls into the Gulf of Obi by three arms, of which the eastern is the largest and deepest.

The estuary of the Obi abounds in walruses and seals, which are captured by the fishermen of Obdorsk, the most northern settlement in this district—lat. 66 34' N. This remote little station has some 150 inhabitants, dwelling in houses built of ships' timbers. A stranger entering the village in summer would suppose it to be deserted, no human form being visible and the doors all locked. Young and old having repaired to the Gulf for the fishing is the explanation of this. Every year, at Christmas, there is a fair, to which 10,000 people resort,

principally merchants, who exchange the furs of the fox, lynx, squirrel, marten, otter, bear, wolf, reindeer, ermine, and sable for ready-made winter clothing. Thirty-two steamers were plying upon the Obi at the close of 1876, and their number is increasing yearly. The basin of this noble river is very rich in wheat, minerals, cattle, and other products, and contains over 2,500,000 inhabitants.

The second river in magnitude of Siberia is the Yenisei, whose basin extends over an area of little less than one million of miles. Its remotest branches originate in the Chinese Empire amongst the slopes of the Sayansk and Tannu Ola Mountains. Bursting through the Sayansk chain in a series of cataracts and rapids, it enters the plains of Siberia some distance to the southward of Krasnoiarsk, above which it is joined by the Angara River, which flows from Lake Baikal near Irkutsk. From this point it pursues a northerly direction, receiving the waters of its principal tributaries, the Middle and Lower Tunguska in lat. 62 N. and 66 N. Numerous other streams from east and west join it on its passage to the Arctic Ocean, into which it falls in lat. 70 N., where it enlarges into a wide estuary, interspersed with low islands and shoals, called the Gulf of Yenisei. To the northward of the town of Yeniseisk it receives, from the westward, the Ulu-kem, a small river but of considerable importance as a link in the line of water communication extending

from the boundary of the Chinese Empire, south of Lake Baikal, to the foot of the Ural chain. The total length of the Yenisei may be estimated at 2,800 miles.

Between the estuaries of the Obi and Yenisei several comparatively small rivers fall into the Arctic Ocean, the principal amongst which are the Nadym, the Pur, and the Taz; whilst to the eastward of the Yenisei we find the Pyasina, the Khatanga, the Anabara, and the Olenek which, after pursuing a general northerly course, reach the same destination.

The third great river of Northern Asia is the Lena, whose waters drain an area of about 800,000 square miles. This river rises in the slopes skirting the western side of Lake Baikal, near Irkutsk, and pursues a north-easterly direction as far as Yakutsk—described as the coldest town on the face of the globe—after which its course runs due north until it falls into the Arctic Ocean, its mouth forming a delta which projects into the sea. The total length of the Lena is about 2,500 miles, and amongst its most important tributaries may be mentioned the Vitim, the Olekma, and the Aldan, flowing from the south-east and east, and the Vilui, which joins it about lat. 64 N. from the west. Near the mouth of the Lena stand the banks of frozen mud in which are found enclosed the bones of an extinct species of elephant and rhinoceros; these I shall refer to later on.

East of the Lena lie the embouchures of the rivers

Yana, Indijirka, and Kolyma, all of which are navigable and of considerable magnitude, though dwarfed by the vast dimensions of their giant sister.

The Anadyr River rises on the south side of the mountain range that terminates at Behring Strait, the small lake from whence it issues being as nearly as possible on the Arctic Circle. It pursues a devious easterly course for 600 miles before falling into that part of the Pacific Ocean known as Behring Sea, in which it forms a small gulf on which it has bestowed its own name. The country traversed by this river consists of naked, barren, rocky hills of variable height, a bleak inhospitable corner of the earth where the summer never exceeds three months in duration, and where no domestic animals less hardy than the reindeer and dog can exist. Various small rivers fall into the Sea of Okhotsk, none of which merit our special attention. The Amur I have already touched upon in describing the territory to which it has given its name.

Lakes of varying depth and dimensions, some salt and devoid of animal life, others sweet and teeming with fish, are found throughout the whole of Siberia, but none of them are important enough to demand a separate notice, with the exception of those in the Altaï Range, which are scattered, at different elevations, over the terraces forming the descent from the table-land to the Siberian plain. Of these the most important is Lake

Baïkal, an immense sheet of water embosomed in mountain ranges, and covering an area of 14,000 square miles. It lies between lat. 51 and 56 N., and long. 104 and 111 E., and is about 400 miles in length by 35 in breadth, having a circumference of nearly 1,200 miles, making it, next to the Caspian and Aral, the largest inland sheet of water in Asia. It extends in the general direction of north-east and south-west, the extremities being somewhat bent, which gives it a rude resemblance to the moon when a week old ; by the Russians it is called Svyatoe More, or Holy Sea. Lake Baïkal is surrounded by desolate and rugged though picturesque shores, formed on the north-west by the mountains, which encircle it closely, and which are densely covered with forest trees. Its depth is great but variable, the deepest part lying at the extreme south-west end, and, according to soundings taken in 1872, showing 600 fathoms. Innumerable small mountain torrents flow into the lake, and it is joined by the Upper Angara River at its north end, the Lower Angara issuing from it near the south, and forming the sole outlet that it possesses. The Selenga, flowing into it on the south-east, is its largest tributary. Agriculture in the neighbourhood of Lake Baïkal is very unprofitable, but the waters yield the scanty population abundant supplies of food. It is one of the few fresh water lakes in which the seal is found, and two thousand of these animals are killed annually.



CHAPTER III.

THE GEOLOGY OF SIBERIA.

THE geography of so vast a tract of country as Siberia can only be roughly described in the space to which this volume is limited, but I hope that the foregoing pages will give a sufficiently clear idea of the surface features of the country for all practical purposes. The same remark applies to the geology, which I now present in a condensed form, briefly portraying the principal formations, from the published accounts of the many industrious inquirers, who have been employed since the early part of the present century in the scientific exploration of Northern Asia.

The great plain of Siberia may be described generally as buttressed east and west, and bounded to the south by mountainous masses of the Crystalline Schists. The western barrier of this formation, originating southwards near the parallel of 47 N. and 60 E. long., skirts the base of the line of the Ural chain on both sides. Towards the east, from the source of the Tobol to the

mouth of the Obi, just under the Arctic Circle, the rocks of this character occupy a breadth of some five degrees of longitude. Here a bifurcation occurs, the western branch proceeding north to the shores of the Sea of Kara, the eastern one running in a line with, though at some distance from, the western coast of the Gulf of Obi, and terminating in the promontory of Olenoi Noss. In this inhospitable group, known as the Mountains of Obdorsk, are still found the cave-dwellings and traces of the mining operations of a pre-historic people; some writers have conjectured that here was the home of the one-eyed Arimaspians of Herodotus.

Not far from the southern termination of this extended line the same granitoid formation reappears towards the east, in the upper valleys of the Ishim, an affluent of the Irtysh, and of the Sari-Su, which drains into the Sea of Aral. But these clusters may be regarded as but mere fragments when compared with the great chain forming the southern boundary of Siberia. This takes a course from south-west to north-east, from the seventieth (70°) to the hundred and thirty-fifth (135°) degree of east longitude, and range from the forty-third (43°) to the fifty-eighth (58°) parallel; whilst its average breadth may be taken at from five to ten degrees. Rising in the neighbourhood of the springs of the Chui and embracing the basins of the Balkash and Issik Kul Lakes, it forms

in succession the ranges of the Thian Shan, the Altaï, the Sayansk, the Daurian, and Yablonoi Mountains. This last-named range approaches within a few leagues of the littoral of the Sea of Okhotsk, and constitutes the water-shed of numerous streams which flow into that arm of the Pacific.

The third instance of the occurrence of the Crystalline and Granitic rocks is in what we have referred to as the eastern buttress of Siberia. It forms the basin of the lower course of the Anadyr River, and stretches from about the one hundred and sixty-fifth (165°) degree of east longitude to the termination of the continent in the Vostotchni Noss, or East Cape. This tract has been but little explored with the exception of the coasts, where elevations of considerable height are reported.

Besides these main fields of this formation, others exist of much smaller extent, but yet worthy of note, as it is in connection with the rocks of this character that the discovery of gold deposits has generally been made. Proceeding westwards then from the banks of the Anadyr, along the sixty-sixth (66°) parallel, we find another extensive surface of the same geological nature at about one hundred and thirty-five (135°) degrees east longitude. It is here that the source of the Yana is to be found almost encircled by spurs of the primary transition rocks of the Aldan Mountains. A still more important section offers itself in the same latitude and some thirty degrees

further west ; it extends from sixty-two (62°) to seventy (70°) degrees north, and from ninety-six (96°) to one hundred and fourteen (114°) degrees east longitude. Here the Olenek and the Anabara take their rise, and the upper course of the Lower Tunguska occupies a considerable portion of the district. To the south-west of this great bed runs the valley of the Middle Tunguska, which from its source to its embouchure into the Lena, consists of the same schistous formation. In this valley rich gold-mines are worked, and within the last few months a nugget weighing one hundred pounds avoirdupois, said to be the largest ever found in Siberia, has been dug up at a distance of about one hundred versts from the mouth of the river.

The last instance of the appearance of this interesting formation that we shall mention lies to the northward of the two above described, and follows the direction of the ninety-fifth (95°) degree of east longitude from about the seventieth (70°) parallel northwards to the sea, forming the central ridge of the peninsula which ends in the bluff headland of Cape Taimyr.

The Primary Stratifications, or, as they are usually termed, the Transition Series, including rocks partly Silurian, partly Devonian, and comprehending the Carboniferous Systems, are not developed to such an extent as those of the Crystalline order, whose situation has been

described above. Compared, however, with the area of the British Isles, this formation in Siberia is three times as great as the whole superficial extent of the former. Commencing as before, from the western frontier, it first is met with in the extreme north, parallel and continuous with the western slope of the Granitic range of the Obdorsk Mountains. To the south it is found filling a considerable space, interspersed with volcanic rocks, between the valleys of the Ishim and Tobol. The line it takes from west to east lies, generally speaking, under the fifty-first (51°) parallel, and the centre may be placed at about the sixty-fifth (65° E.) meridian. Another large tract spreads itself between the Ishim and the Irtysh, the principal axis of which runs from south-east to north-west, between the forty-fourth (44°) and fifty-third (53°) parallels; its ramifications stretching eastward and westward, cover some fourteen degrees, between the seventieth (70° E.) and eighty-fourth (84° E.) meridians. Further to the south-west the same rocks make their appearance flanking the western termination of the Thian Shan; following the curves of that range they wind round it from the thirty-sixth (36°) to the forty-seventh (47°) degree of latitude, and from the sixty-fifth (65° E.) to the seventy-fifth (75° E.) meridian. It is here that the Sir Daria takes its rise.

Crossing to the northern declivities of the Altaï we fall in with several detached fields of the same formation to

the westward of the ninetieth (90° E.) meridian. Yet farther to the north it is exhibited to an extent far greater than any hitherto defined. A vast expanse of a rudely triangular form, of which the town of Irkutsk, under the fifty-first (51°) parallel, may be considered the apex, stretching westwards and eastwards to the eighty-fifth (85° E.) and hundred and twentieth (120° E.) meridians, and northwards to the sixtieth (60°) degree of latitude, presents one of the most extensive developments of this Geological Series in the world. This widely diversified region is drained by the upper streams of the Lena, the Angara, the Yenisei, and its tributaries, the Chinchinsk and Ket, branches of the Tom, and so affluents of the Obi. Descending the valley of the Yenisei, to its junction with the Bahta (63°), these rocks of the Transition Series occupy either bank, and again, lower down, near Turukhansk, where the Kursek unites its waters with the first-named river, they are also found. Further to the north, under the Arctic Circle, a huge mass of similar character trends in a north-eastern course through the barren *tundras* of the peninsula which terminates in the North East Cape from the seventieth (70°) to the seventy-eighth (78°) parallel, and between the ninety-fifth (95° E.) and hundred and fifth (105° E.) meridian.

The most extensive bed, perhaps, of the Siberian Primary strata remains still to be described.

It lies to the north and north-west of the Sea of Okhotsk, between the fifty-second (52°) and seventieth (70°) parallels, and the hundred and thirtieth (130° E.) and hundred and seventy-third (173° E.) meridians. Its shape has been compared to the outline of the front view of the head of the Siberian elk. From its southern base the branches spread in four prolongations, the two centre taking a northerly, the outer ones a north-westerly and north-easterly direction respectively. Within these are comprised the main chains and offsets of the Stanovoi and Aldan ranges, which form the watersheds of the Yana, the Indijirka, the Kolyma, and the Anadyr Rivers, and the numberless tributaries which serve to swell the volume of their waters.

Leaving behind the sterile wastes of the north and turning towards the frontiers of China, the same formation crops up in the neighbourhood of the upper stream of the Shilka, and between that river and the Argun, as also in the immediate proximity of their confluence with the Amur. Travelling westward from this last point, which is situated near the fifty-third (53°) parallel and the hundred and twenty-second (122° E.) meridian, these strata reappear near the sources of the Vitim. To mention them for the last time they are found again covering a considerable area upon the eastern side of Lake Baikal.

It is now time to speak of the Secondary Series ; under

this order are included the different Chalk beds. Compared with the two formations of which we have already treated, this one occupies but a limited space. To the west, a patch commencing towards the south, in the neighbourhood of Irbit, extends as far north as the valley of the Tavda, under the parallel of sixty (60° N.). Several similar sporadic masses are scattered over the steppe of Ishim, and are found also eastward of the river of that name. In the upper course of the Irtysh it is developed on a more extensive scale; the larger bed lies on the right bank of the river, and embracing the lakes of Tchany and Sumi or Chebaky, stretches from the forty-eighth (48°) to the fifty-fifth (55°) degree of north latitude. Northwards from this last point, proceeding from the source of the Ket to that of the Taz, these strata, more or less isolated, are continually met with between the seventy-eighth (78° E.) and eighty-second (82° E.) meridians. They present themselves again west and east of the course of the middle Lena, filling a large space bounded on the west by the River Vilui, and on the east by the upper streams of the Aldan. These beds wedged in between the Primary formations of the great triangle of Irkutsk, and those of the Stanovoi and Aldan Mountains, occupy a field within the limits of the sixtieth (60°) and sixty-fifth (65°) parallels, and the hundred and twenty-fourth (124° E.) and hundred and thirty-seventh (137° E.) meridians.

To the extreme east of Siberia, the littoral of the western slopes of the peninsula of Kamtchatka, again exhibits rocks of a like Geological character.

In entering on the delineation of the Tertiary and Alluvial formations of Siberia, it is to be observed that by far the greater extent of its surface still remains to be Geologically described. These later deposits make up three-fifths of the whole country, at least. The main field of the former one, an immense tract, which has its commencement at the foot of the Hindu Kush, may be taken as extending from that boundary, through the Khanates and Turkestan, to the shores of the Arctic Ocean. Restricting, however, its limits to Siberia proper, it spreads with few interruptions from about the forty-fifth (45°) parallel to the north coast, and from the lower declivities of the Ural Mountains in longitude sixty-five (65° E.), to the banks of the Yenisei under the ninetieth (90° E.) meridian. These formations, though of insignificant extent, when compared with this almost unequalled instance, appear also in the broad valley of the Lower Amur, as well as towards the mouths of the Kolyma, Indijirka, and Yana. In the peninsula of Kamtchatka, a continuous band of these deposits runs parallel on the western side of the central volcanic line of mountains, lying between these and the rocks of the Secondary Series of the coast.

The Alluvial beds, especially interesting as yielding numerous specimens of the antediluvian race of the mammoth, even exceed in extent the deposits of the Tertiary System, just now dealt with. Skirting the shores of the Sea of Kara in European Russia, in Siberia, they form the littoral of the peninsula of Yalmal, of the gulfs of the Obi and of the Yenisei, spread eastward as far as the hundred and sixty-fifth (165° E.) meridian, through the wastes and solitudes of the *tundras*, whose dreary flats are only here and there broken by the intrusion of the Granitic and Primary ranges, to which we have already referred, and to the south as far as the sixtieth (60°) parallel. To the east, this almost limitless deposit is encountered by the lofty heights of the Aldan and Stan-ovoi Mountains with their various branches. A belt, however, bending southwards forms a circuit around the Sea of Okhotsk, constituting the littoral lying between its waters and the Schistous elevations of the Yablonoi. From the eastern base of the latter range an arm of this prolongation penetrates as far south as the junction of the Shilka with the Amur, under the fiftieth (50°) parallel, through the Tertiary deposits found in the valley of the last-named river.

I shall conclude this rapid, and consequently very imperfect, sketch of the Geology of Siberia with some mention of the Igneous and Volcanic rocks, which cover a con-

siderable proportion of the surface of the country. Being connected with the phenomenon of the burning mountains (seldom resting from their activity) of the peninsula of Kamtchatka in the extreme east, with the continually-recurring earthquakes and submarine disturbances of the Baikal region in the south, and as forming the spinal cord, as it were, of the Uralian upheaval throughout its whole course from north to south, they present features of extraordinary interest. In character they belong almost exclusively to the Traps and volcanic outbreaks of the Tertiary epoch, and are found, generally speaking, in immediate association with the great granitic ranges. Thus, on both sides of the central band of the Ural chain, to which reference has just been made, flanking masses of granites and schists extend from its origin to the north, lying beneath the Arctic Circle, to its termination towards the south, near the forty-sixth parallel (46° N.). Eastwards from this latter point, on the left bank of the higher course of the Ishim, Igneous rocks again present themselves among the primary stratifications of the steppe which derives its name from that stream. Onwards further, in a northeasterly direction, the same formation is met with in the neighbourhood of Lake Zaizan, the principal source of the Irtysh, lat. 48° N., long. 83° E., and repeats itself on the northern slopes of the Altaï, under the same

meridian, towards the district of Kuznetsk, so famous among the native tribes for its iron and the good knives and spear-heads made therefrom. A yet larger development is found in the Sayansk ranges, lat. 53° N., long. 95° E., and five degrees north of this considerable detached masses are observed in the upper valleys of the Chului and Yenisei. Sporadic bodies, of small extent however, offer themselves to view, under the same meridian, about 60° and 64° N., in the great Tertiary plain and in the Alluvial valley of the Lower Tunguska, near its embouchure. Occasional masses of basaltic rocks arise in the lonely solitudes of the wild steppes, assuming, some weird, others fantastic forms, which are usually attributed by the ignorant natives to the handiwork of malignant and evil spirits; while in the narrow glens of the spurs of the Altaï are found columnar groups which rival in their strange beauty the world-famed pillars of the Giant's Causeway and the airy shafts of the cave of Staffa. But it is on the western shores of the Lake of Baïkal, the Holy Sea of the hardy Cossack and Russian peasant, that this formation is exhibited on a truly magnificent scale. It is here that the volcanic power from time to time gives evidence of an energy which only slumbers to awake with renewed and destructive forces. Submarine convulsions are of annual occurrence, causing the death of countless myriads of the finny inhabitants of the bottomless

depths; it is on these occasions that specimens of the mysterious *golomain*, to which I more fully refer in another place, are cast upon the shores. Shocks of earthquakes are not uncommon, and their severity is hardly exceeded by those which work such destruction on the western coasts of South America. Within the memory of the present generation large tracts upon the borders of the lake have suffered considerable elevation and depression, and in several instances villages of some size have been submerged. The effects of these subterranean movements often extend to the valley of the Selenga, and as far south as the Chinese frontier at Kiachta.

Another field of a like character lying between the primary formations of the Aldan and the alluvial of the littoral, occupies the north-western angle of the Sea of Okhotsk, and is continued round the head of that water till it merges in the noble central chain of Kamtchatka, where the grandeur of volcanic action is exhibited in its highest intensity. The most conspicuous of the elevations of this group are elsewhere described, and I shall only add that they are considered to belong to the same great system which, taking its rise in the Philippine Archipelago, traverses the islands of Japan, and then trends northwards in one direction towards the mainland of Siberia, in the other through the line of the Kurile Islands towards the coast of Alaska.



CHAPTER IV.

MINERALOGY.

THE mineral treasures for which Siberia is celebrated, are produced from three principal districts, of which the western comprehends the mines on the eastern declivity of the Ural Range, and has for its centre Ekaterinburg, a town containing some 20,000 inhabitants. The mineral district lies between 56 and 60 N. lat., with a general breadth of forty miles, and produces large quantities of gold, silver, copper, iron, platinum, and many precious stones, amongst which I may instance the emerald, amethyst, topaz, and beryl, together with other substances such as chalcedony, jasper, malachite, &c., not classified under the head of gems, but of great value for the fabrication of statuettes, vases, and other articles of *vertu*. In this neighbourhood lie the government mines, from whence a small quantity of gold is extracted, but the principal

minerals worked are copper and iron, such warlike materials as guns, shot, sabres, bayonets, &c., coming from this quarter. Here also are situated the Demidof malachite mines, from which is drawn the beautiful green oxide of copper with which we are all familiar.

The headquarters of the Russian lapidaries is at Ekaterinburg, and a stranger on arrival is beset by importunate vendors, who force upon his notice trinkets made from every known pebble in the mineralogist's vocabulary. To give the reader some idea how great is the demand for these handsome little playthings, we may mention that no less than 150 hands are engaged in the Imperial Establishment, whilst many of the private factories employ as many as twenty-five, thirty, or even more skilled artisans.

The second mining district is that of Barnaul, and the city of that name is the centre of all the operations conducted in the Altaï Mountains. Great quantities of silver and copper—more particularly of the former metal—are found in this locality, and the work of smelting is constantly in progress. Some 40,000 lbs. of silver is said to be sent annually from Barnaul to St. Petersburg, cast in cakes ten inches square. On reaching the capital the silver is refined and about 3 per cent. of gold extracted from it.

The third mining district is that of Nertchinsk, which is

situated on the east of the Yablonoi Khrebet, in the basin of the river Amoor. Here large quantities of gold are found in the sand and earth forming the beds of the river Nertcha and its tributaries, besides silver, iron, antimony, arsenic, tin, and lead, the last a discovery of the utmost importance as it is sent to the Altaï mines for the purpose of reducing the silver found there ; formerly this weighty mineral was imported from England and tediously conveyed to the Barnaul smelting works.

Nertchinsk, has a sound of ill omen in European ears, owing to the great number of political exiles that were, at one time, forwarded there, and compelled to perform severe manual labour, under which, and its accompanying privations, many of gentle birth and rearing sank into a too early grave. That many of the records of brutal treatment—of the malice of vindictive overseers—of fettered limbs, scanty clothing, bad food, and general severity are sadly true, I have every reason to believe, and that the condition of the miserable miners was one of such abject despair that they envied the fate of those amongst them whom a landslip released from all worldly troubles, is easily to be credited. But it does not lie within my province to enter into any particulars concerning these unfortunate people. If they sinned, they suffered deeply, and so I gladly quit the subject of Siberian exiles. I must mention, whilst cursorily treating the subject of the

indigenous minerals, the *aqua marina*, which is found in the neighbourhood of Nertchinsk ; the lapis lazuli, lately discovered in the valley of the Kultuk ; and by no means must we omit the rather rare mineral zircon, which is met with in the vicinity of Lake Ilmenskoi.

Emeralds of extraordinary size and extreme brilliancy and beauty are occasionally stumbled upon in the Murinsk district, a region especially rich in precious stones of many kinds. Quicksilver, also, is reported to exist in some of the north-eastern provinces, in such abundance as may some day influence the price of this valuable mineral in the European markets. Some other metals which are of importance in commerce will be found mentioned in the chapter which treats more particularly of the trade and manufactures of Siberia.

In concluding this brief sketch of the mineralogy of Northern Asia, I may remark that, whereas, in former years, the whole of the Siberian mines belonged to the Russian Government and were worked by officers appointed for that purpose by the crown, now, the loss attendant on locking out private enterprise has been fully recognised, and mining operations having been thrown open to all comers, the energy of individuals has received a stimulus which promises to reward the Government amply for their sensible concession. Whilst the mines remained in the hands of the crown, none of the officers

in charge would run the slightest risk or deviate one inch from the beaten track, however great the prospective advantage to his employers. His position and salary were both secure; why should he jeopardise either by risking a single rouble? Private enterprise, with a hundred eager competitors striving for the same goal, is hampered by no such prudential considerations, and mining operations in Siberia are daily assuming a larger scale, and the royalty, or percentage, claimed by Government, pays it far better than in the old days when the mineral wealth of the country was virtually locked up.



CHAPTER V.

THE FAUNA OF SIBERIA.

THE fauna of Siberia is somewhat limited, owing to the extreme rigour of its climate, but many of the animals inhabiting that inclement region are highly important, both from their furnishing the natives with food, as well as yielding a warm fur, which enables them to set at defiance the low temperature of even an Arctic winter. From time immemorial the people of Upper and Farther Asia have practised the chase of fur-bearing animals, at first, probably, to supply a pressing necessity and furnish themselves with food, but of late years, since familiar intercourse has been established between the civilised inhabitants of Europe and the native tribes, the latter have ascertained the real value attaching itself to the denizens of their forests, and the chase is now followed as a means whereby the Yakut or Ostiak first meets the claims of the tax-gatherer, and then, by

bartering the residue of his hunting trophies, supplies himself with articles of luxury of whose very existence, two centuries past, he was unaware.

I do not propose to enter into minute particulars regarding these animals, for all such information will be readily found in the pages of any modern writer on Natural History, but I shall briefly enumerate the various species in pursuit of which the hunter faces the solitude of the snow-sheeted wilderness, and insert such anecdotes concerning them as I think may prove interesting to the general reader.

Eight fur-bearing animals, of the order of *Carnivora*, are found throughout Siberia from its southern extremity to the northern limit of forest growth :—The Common or Brown Bear (*Ursus Arctos*) ; the Wolverine or Glutton (*Gulo Borcalis*) ; the Common Badger (*Meles Taxus*) ; the Fomart or Polecat (*Mustela putorius*) ; the Weasel (*Mustela vulgaris*) ; the Ermine (*Mustela erminea*) ; the Common Otter (*Lutra vulgaris*) ; also the Sea Otter (*Lutra Marina*), which inhabits the coasts of Kamtchatka and Behring Strait, and possesses a fur more highly valued even than that of the sable.

The forest-clad portion of Siberia is also inhabited by the Common Fox (*Canis vulpes*), with its varieties *Vulpes alopec*, *Vulpes crucigera* (cross), and *Vulpes nigra* (black) ; the Common Wolf (*Canis lupus*) ; the Black Wolf (*Canis*

lupus lycaon); the Yellow Fox (*Canis corsac*); the Common Lynx (*Felis lynx*); the Deer Lynx (*Felis cervaria*); and the Polar Lynx (*Felis borealis*).

Of the order *Rodentia* we find the Striped or Earth Squirrel (*Sciurus striatus*); the Beaver (*Castor fiber*); the Northern Hare (*Lepus variabilis borealis*); the Siberian Hare (*Lepus Tolai*); the Piping Hare of Pallas (*Lepus hyperboreus*); and the Stone Hare (*Lepus Alpinus*).

The Beaver is highly valued in Siberia, partly for the beautiful skin which it yields, but chiefly for the odoriferous substance, named castoreum, which is secreted in two glandular sacs placed near the root of the tail. As soon as possible after the beaver is killed the bags are cut off, dipped into warm milk, and then slowly dried, when the fragrance which issues from them is exceedingly powerful. The Siberians credit this substance with curing headache and numerous other complaints, in fact, if a family are possessed of some castoreum and a little sal-ammoniac they consider themselves independent of the druggist. The fat of the beaver, also, if well rubbed in, is efficacious in the removal of gouty swellings.

Of the order *Ruminantia* there are three species, one of which is pursued and killed, not for the value of its fur or hide, but on account of a substance which the male animal carries in a glandular pouch placed in the

abdomen. This is the genuine Musk Deer (*Moschus moschiferus*), which inhabits the rugged valleys and pine-clad forests of the mountainous country between Lake Baikal and the Altai Mountains. The Tungoose hunters await the season of migration, when the rigorous winter forces the deer to seek a less inclement district, and, lying in wait, destroy a considerable number annually. Immediately a buck is killed the musk-bag is carefully removed, so as to bring its precious contents into contact with the air for as short a time as possible, and so overpowering is the odour as to cause a violent headache to those employed on this service.

The second ruminant, the Argali (*Capr vis Argali*) is a member of the ovine race, inhabiting the highest ground of Southern Siberia, and the mountain ranges of Central Asia. It is as large as an Alderney cow, measuring four feet high at the shoulders, but notwithstanding its great weight the Argali can almost vie with the chamois in power of limb and sureness of foot. These animals are liable to be buried in the deep snow-drifts of the Siberian mountains, on which occasions they remain perfectly quiet, breathing through a small hole in their fleecy covering. For these minute but traitorous orifices the native hunters eagerly search, and impale the entombed Argali by driving their spears through the snow into its unresisting body.

It much resembles the Mouflon of Corsica and Sardinia, and the Big-horn of the Rocky Mountains.

The third ruminant is the Elk (*Alces Malchis*), called by the Russians *los* and *sakhatá*, and known as the *toki* by native hunters. It resembles in every particular the animal of the same name in Northern Europe, and the Moose of North America. Being very fleet, shy, and wary, the Elk is difficult of approach, and a successful elk-hunter is a synonym for one who knows his business thoroughly.

To the northward of the Forest Limit, in the dreary expanse of country that stretches to the Frozen Ocean, we find three species of Land-Carnivora:—The Polar Bear (*Ursus maritimus*); the Wolverine (*Gulo Borealis*); and the Arctic Fox (*Canis vulpes lagopa*); and here also dwells the animal on which so many native tribes are almost entirely dependent—the Reindeer (*Cervus tarandus*), found in a wild state only within the limit of the Arctic Circle.

Of the animals above mentioned the most ferocious is certainly the bear, and every traveller in Northern Asia has one or more stories to tell concerning this formidable beast. I extract the following graphic description of a bear hunt, which fully exemplifies the manner in which the hunters seek their game, and the danger attached to this pursuit. A large bear had been seen about ten

miles from the Tsaravo-Nicholiovsky gold mine, "and two men, one a hunter, held in great repute for his daring and skill, determined to make his acquaintance. After wandering about for some time they came upon his track, quite fresh in the long dewy grass. He was evidently near : this made them cautious, and they prepared for action. Presently a loud growl saluted their ears ; then out he sprang from a thicket, about thirty-five paces distant, where he stood snuffing the breeze and eyeing the intruders."

"The hunter fired, and the ball struck, but not in a vital part. In an instant the wounded animal charged—the other man, who was less experienced, reserved his shot until within twenty paces. The rifle missed fire—at once the brute raised himself on his hind-legs, and, tearing the earth beneath him, rushed on his first assailant, striking him down with a blow that stripped his scalp, and turned it over his face, then seizing his arm, he began to knaw and crush it to the bone, gradually ascending to the shoulder. The man called to his companion to load and fire ; but the fellow, when he saw his friend so fearfully mangled, ran away and left him to his fate."

"Late in the evening he reached the gold mine and reported what had happened ; but it was too late to make any effort on behalf of the mangled hunter. The officer ordered a large party out at daylight the next morning,

with the coward for a guide. He took them through the forest to the spot where the encounter had taken place, of which there still remained ample evidence ; but no remains of the victim were met with, except some torn clothing and his rifle. By the state of the grass it was evident that the man had been carried off into the thick forest. A most diligent pursuit was therefore made ; sometimes the track was lost, but the pursuers of the bear were too well skilled in woodcraft to be foiled, and at length discovered his larder. He had dragged the hunter into a dense mass of wood and bushes, and, to render the place still more secure, had broken off a great quantity of branches and heaped them over his body. These were quickly stripped off, when, to their great surprise, they found the man, though frightfully mutilated, and quite insensible, still living ! Two long poles were immediately cut, to which saddle-cloths were secured in the middle. One horse was placed in front, another at the back, and the ends of the poles secured to the stirrups—thus forming a very easy conveyance. The sufferer was placed upon the saddle-cloths, and carefully propped up, and then began the painful march back as fast as possible.”

“On their arrival at the gold mine he was taken direct to the hospital ; the doctor dressed his wounds, and administered all that medical skill and kindness prompted ;

his patient survived, but long remained unconscious of everything around him. After more than two months had elapsed, a slight improvement took place, and his reason appeared to be restored. His first question was about the bear, and then he referred to his own defeat. He spoke of nothing else, and was constantly asking for his rifle to go and kill 'Michael Ivanitch' (the bear). The medical men thought his mind seriously affected. As he gained strength there arose in him so great a desire to have another combat with his powerful and ferocious enemy, that it was considered necessary to place him under some restraint."

"The summer had passed over and autumn had arrived ; the frost had scorched the foliage, changing it into golden and crimson hues ; and as it was now thought the poor lunatic had forgotten his adventure, less vigilance was exercised towards him. The opportunity was not lost, for he secretly left the hospital, and started off for his cottage. All the family being absent, except some young children, he was enabled to secure his rifle and ammunition, and provide himself with an axe and a loaf of black bread, which he stowed in his wallet. Thus armed and provisioned, he left the village in the evening without being seen except by the children, and was soon lost to them in the forest."

"When it was discovered that he had escaped, people

were sent out in various directions to seek him ; but they returned without success. More than a week passed over, during which nothing had been heard of him, when one day he walked into the hospital, carrying the skin of a huge black bear on his shoulders, and throwing it down, exclaimed, ‘ I told you I would have him.’ This man was a fine old hunter—it was not a spirit of revenge which prompted him to this daring act ; the fact was he could not brook the idea of a defeat. Now his reputation was re-established he was happy ; his health was again restored ; nor was this the last bear that fell before his deadly rifle.* †

The same traveller relates that a Cossack officer, whilst botanising, and wholly unarmed, came upon an old she-bear attended by a brace of young cubs, with which she gamboled until made aware of the presence of the intruder, when she drove her offspring into the branches of a tree, and stationed herself at its foot, determined to defend them against all comers. Although wholly unprovided with any weapon of offence, the officer mentally resolved on making the cubs captive, and some woodcutters having recently visited the locality, he was enabled to provide himself with a stout birch sapling, about four feet in length, armed with which insignificant weapon he advanced to-

* “ Oriental and Western Siberia.” By Thos. W. Atkinson. Page 350 *et seq.*

wards the she-bear, who, on observing his approach, moved about to and fro at the foot of the tree, growling unceasingly, and from her savage gestures evidently meaning mischief. The ground was happily clear of underwood or any other impediments to free motion, and, fixing his eyes steadfastly upon those of the infuriated animal, the resolute man continued his advance. When the distance between them had lessened to fifty yards the bear made a rush, but her cubs whining at the same moment, she stopped in her career and retreated to the tree, the Cossack meanwhile steadily advancing, so that when she again faced round the strange antagonists were within twenty yards of each other.

For some seconds man and beast maintained this position, the former fixing his keen gaze upon the blazing little eyes of the bear, who, rushing suddenly forward, rose upon her hind legs, with the intention of grappling the daring intruder. But the Cossack was prepared for the manœuvre, and with one dexterous sweep of his club he laid his foe upon the ground. In an instant she had regained her feet, but before the attack could be renewed another blow stretched her, for the second time, upon the sward. But a bear can stand an amazing amount of knocking about the head without serious damage, and the punishment the animal received serving only as a stimulant to her natural ferocity, a regular stand-up fight

ensued, in which the officer managed always to elude her paws, while raining a succession of heavy blows upon her head and ears, which eventually damped her courage, so that pace by pace she gave ground, until the tree was reached wherein her cubs were stationed, doubtless much troubled in their minds at the rough usage to which they saw their dam subjected. Here the strife became fiercer than ever, the bear making desperate charges, her maternal anxiety re-animated by the whining of the helpless little creatures overhead, but encountering ever the heavy staff of her active foe. Thus the fight continued until the officer had driven the old bear to the skirts of the forest, into which she withdrew, emerging, however, the moment he moved a step in the direction of the tree that held the objects of her solicitude.

How to gain possession of the cubs was now the question whose solution sorely troubled the Cossack. To reach them a climb would be necessary, and all his vigilance was requisite to keep the dam at a distance. Luckily a woodman, on his return to the gold mine, rode into the glade and answered the repeated hails with which the officer endeavoured to draw his attention. On perceiving the state of affairs the man's first, and not unnatural, impulse was, to bolt, leaving the combatants to settle the business to their own liking; but the Cossack imperatively directed him to dismount, take off his saddle-

bags, climb the tree, and deposit the cubs in them, instructions sufficiently disagreeable in themselves, but with which a wholesome dread of the whip induced him to comply. The little animals were brought down one by one, placed in the leathern *zumka*, and safely secured, during which operation their mother made several rushes at her guardian, who each time received her with the club that he wielded so skilfully.

Ordering the woodman to replace the bags on the saddle and to lead the horse towards the settlement, the officer covered the retreat, beating off the unhappy dam every time that she charged in answer to the smothered whines of her progeny. The journey to the village occupied two hours, towards the latter portion of which the mother would not approach within striking distance of her terrible antagonist. The officer hoped to secure her as well as her cubs, but, when the cottages were reached, she returned to the forest and was seen no more. The cubs were brought up as pets and became great favourites with the villagers.

That the hero of this adventure must have been a man of unusual courage and coolness, joined to great physical strength and activity, is apparent, and no one can read the details of this hand-to-hand fight without admiring the intrepidity that prompted an unarmed man to run so terrible a risk for so inadequate an object as the possession

of a brace of bear cubs ; but mixed with the approbation with which we all of us peruse the recital of a gallant deed, some small amount of pity must arise for the wretched mother who fought so nobly and persistently in defence of her shaggy little offspring.

At a certain season of the year—about midsummer—the male bear becomes an object of real dread to travellers, for then it is that Bruin seeks a mate, and furious combats arise should a rival cross his path. At this time also the bear is in a miserably poor condition, not having fattened himself after the prolonged fast of his five months hybernation, and the vegetable diet on which he loves to subsist having not yet put forth an appearance, he is reduced to great straits for sustenance, and becomes very ferocious, attacking horses on every opportunity, although rarely venturing to assail a camp of men. A solitary traveller, however, would run considerable risk were he rash enough to sleep in the forest at that season, for even the presence of fire—usually effectual in scaring wild animals—proves no safeguard against the onslaught of Bruin. Not that a circle of flame is without terror to this cunning brute, for nothing would induce him to break through such a barrier without previously adopting an expedient which speaks volumes for the animal's sagacity. If resolved upon attacking a sleeper defended by a ring of fire, the bear resorts to the nearest stream,

immerses himself therein, and returning with his heavy fur saturated, he proceeds deliberately to extinguish the embers *by rolling on them*, after which intellectual achievement he proceeds to his repast. This fact is well-known to all the native Siberian tribes, who always, if possible, avoid camping out alone.

The terror displayed by horses when in the vicinity of bears is very remarkable. During a rough Siberian journey these animals will courageously pick their way along insecure paths—where one false step would entail certain destruction—will swim rapid rivers, and exhibit a wonderful degree of pluck and endurance, and yet let them detect on the wind the scent of a bear, however remote, and their courage disappears, leaving them as timid as frightened sheep. Not all the spurring, whipping, coaxing, and caressing in the power of man to bestow, will induce horses to pass a spot at which they believe a bear to be present. The only method for travellers to adopt, on being brought to a standstill by this mishap, is to tie the terrified animals together and start off into the wood in search of their enemy. Ten to one but the cause of alarm is miles away, and no single trace of him to be found; nevertheless the horses are clever enough to know that their human allies are anxious to defend them, and a few pistol shots fired off go further towards re-assuring them than any other known expedient.

To show how much bears are dreaded, a traveller* mentions that whilst at Yakutsk he paid a visit to a Russian naval officer, whom he found about to start on a journey, accompanied by his wife, child, and two maid-servants, which they calculated would take two months to accomplish, the road lying through a desert and dangerous country. A well-armed man on either side of the woman was considered indispensable, on account of the close character of the woods in many places, and the number and fierceness of the bears, which rendered unusual vigilance necessary. The traveller entered his friend's house, at the time that the latter was exercising his cavalcade, as some sort of preparation for the journey before them. He says: "It may be easily supposed that this new life for two months required some previous training; and for this purpose the lieutenant had turned a spacious enclosure which was attached to the house in which he was lodged into a kind of military riding-school, in which the party were now about to perform their first exercises. The lady had once been accustomed to horse exercise; but she had not mounted for nine years, and she was now very timid in sitting her horse. The child was simply stowed in a basket, which was lashed upon the horse's back. But the maidens of the party were the great difficulty. One of them had never been on horse-

* "Travels in Siberia." By S. S. Hill. Vol. II. p. 209.

back before, and she was now only placed upon her saddle to be taken off again weeping with terror, as well for the present as for the thought, no doubt, of the future ; so that it was doubtful whether she would be able to attempt the journey."

"At length, after very much ado, the rest sat firmly enough on their horses for a first trial ; and, as soon as they had made a few turns round the court, the men of the party mounted also, and fell into the regular order of the future march. The lieutenant and a Yakoute, both armed—the lieutenant with a tomahawk and pistols, and the Yakoute with dagger only—preceded the rest. After these came the lady and her child and the more courageous of the two maidens, guarded by Yakoutes on either side. And in this manner they moved on with slow and solemn march round the court, so sad and sorrowful, that they looked more like a cavalcade of the tired soldiers of some barbarian chief conducting a captive beauty with her maidens to a place of security, than a party training for defensive war with the wild beasts during a voluntary journey. The whole of the party, however, with the exception of the most timid of the maidens, who could not be persuaded to sit upon her horse that day, after an hour or two's practice, went very well through their exercise for a first essay."

The dread of wild animals must be somewhat more

than imaginary to induce an inhabitant of the country to take such precautions as these.

The Yakuts tether their horses at night in a peculiar fashion. A running loop is worked in a piece of rope, and placed round the fetlock of the near hind foot; from thence the cord passes round the upper part of the near fore leg, and is finally secured round the animal's neck. This fetters their motions sufficiently to keep them within a reasonable distance of the camp, and yet permits them to shuffle away if a bear makes his appearance. If disturbed by one of these animals at night, the horses immediately fly to their master's encampment, where they huddle together snorting with terror, and exhibiting an anxiety distressing to witness.

Later on in this volume I make mention of the Ostiak custom of swearing upon a bear's head. All the native tribes hold this powerful animal in great veneration, although this superstitious regard by no means stands in the way of their killing him whenever the opportunity presents itself.

None of the other fur-bearing quadrupeds are dangerous to man, except the wolf, and even this animal is less to be dreaded than its European congener, although it often inflicts great havoc amongst the herds of tame reindeer. If a Siberian finds his sleigh pursued by wolves, he fastens a coat, or any other spare garment he

may have at hand, to a piece of string, and tows it astern ; so suspicious of hidden danger are the ravenous brutes that they never attempt to advance ahead of the drag.

The winter hides of the large Asian wolves being highly prized the animals are hunted and trapped unremittingly, but their extreme wariness renders the former process very tedious, and the natives usually employ baits poisoned with strychnine for their destruction. The most successful species of trap consists of a double circular pen, about ten feet in height, or rather two pens placed one within the other, so as to allow of a small narrow passage existing between them. In the wall of the outer pen is fitted a small door, opening inwards, but no communication exists between the outer and inner pen, within the latter of which a live deer is placed as a bait, the animal being hoisted up and then lowered down into the enclosure. The trap is now ready. The wolf scents the deer, and after sneaking round the whole palisade, discovers the little door, which he pushes open easily, and finds himself in a passage so narrow that to turn is an impossibility, even supposing that he contemplated such a judicious manœuvre with the odour of the deer assailing his hungry nostrils. So onward pushes the marauder, following the passage between the pens until he completes the circle and reaches the door by which he first entered. This is standing open and naturally

bars his passage, but finding that it yields to his slightest touch, he continues his onward course, thereby closing the door most effectually and becoming the instrument of his own capture. In the morning the trapper spears or shoots him from the top of the pen, and releases the unharmed deer.

Both wolves and foxes are also sometimes run down by hunters expert in the use of snow-shoes, but few Europeans practise this mode of capturing them.

During the time that a detachment of the Russo-American Telegraph Company were camped on the Anadyr River, an adventure befell one of its members which showed that wolves are at times very dangerous animals. Mr. Bush tells us: "Three miles back of the station, on the tundra, were several small lakes that the men frequently visited for the purpose of fishing through the ice for trout. In this they were quite successful, and nearly every fair day some of them would be out with their lines, carrying axes with them to keep the openings clear of ice. On this occasion Young was alone, and had no protection except his axe. It was very common to hear the howling of wolves on the adjoining tundra, but the men had learned to pay no attention to it. While fishing near the middle of a small lake, Young was startled by hearing cries of wolves very near by, and, glancing in the direction from which the

sound came, soon saw a large buck reindeer dash down on to the lake and rush along the shore within a hundred yards of him. A minute afterward, seven full-grown famished-looking wolves of very large size also dashed down upon the lake at full speed, with heads and tails in the air, following the tracks of the deer. Young seized his axe, but kept perfectly still, hoping the animals would not perceive him. On they dashed, and were just about to pass by, when, one of the pack catching sight of him, the whole band rushed towards him. Anticipating a severe struggle, he sprang to his feet, swinging his arms and the axe, and shouting at the top of his voice. The wolves were evidently not expecting such an apparition, and were so struck with astonishment that they stopped immediately, and squatted on the ice within a hundred feet of him. But in a minute they gained courage and made another dash for him. Having observed the effect of his first actions, he repeated them, but this time with still greater vehemence—yelling, swinging his axe, and starting toward them. They paused only for a moment, and then fled, taking up the trail of the deer again. After this episode Young at once took up his line of march back toward the station, the worst scared man in North-Eastern Siberia, according to his own statement, and fully resolving never again to venture alone upon the tundra."

The smaller fur-bearing animals, such as the wolverene, sable, and ermine, are either trapped or shot, and so expert are the hunters in the use of their clumsy rifles that it is rare to find even a squirrel shot through any other part of the body except its head ; even the minute Siberian bullet would make a rent in the delicate fur sufficient to disfigure it.

A few words now concerning that most useful of animals in hyperborean climes—the reindeer.

Although the reindeer in its wild state inhabits a country lying within the Arctic Circle, and consequently almost beyond the limit of forest growth, it resorts to the shelter of the woods during the winter, but quits them in the early spring, driven into the open ground by the myriads of gnats and mosquitoes that infest the thickets. By the time that this annual migration takes place the ice has broken up, and on the banks of the released rivers the natives station themselves, and await the arrival of the herds to lay in their stock of reindeer meat. For days they patiently watch for the game, refraining from lighting even a fire, lest the smoke should betray their presence to the migrating animals, and cause them to seek some safer route. Many hundreds of reindeer are slaughtered annually whilst making the passage of the broad rivers, the native hunters surprising the herd in mid-channel, and by means of their long spears dealing

death strokes with marvellous rapidity and dexterity. The meat is stripped from the carcase of the animal, cut into strips and placed upon a framework exposed to the full power of the sun.

I have described in another place the manner in which the reindeer is ridden, and its utility as a draught animal is too well known to need any remark. A stout buck will draw with apparent ease a load of 240 lbs., at the rate of ten miles an hour, and one of these animals has been known to cover 150 miles of ground in nineteen hours. When ridden over ground uncovered by snow reindeer make a most peculiar clattering noise with their feet, producing a sound as though the rider accompanied every step of his steed with a pair of castanets. This is caused by the coming together of the sides of the cloven hoof when the animal lifts its foot, and ceases when the snow is sufficiently deep to clog them. Reindeer are terribly tormented by a species of gad-fly, which, burrowing under the skin, lays its larvæ in the living flesh, producing exquisite torture to the unhappy creatures. Practice will enable the traveller to distinguish the spots where these parasites are buried, and if he is charitable enough to pluck the hair therefrom—an operation which the animal willingly endures—the latter will shake itself with such violence as to eject the larvæ from their skins to a distance of several feet.

One of the uses to which a portion of the reindeer may be applied is so little known as to merit notice. From the horns of these animals jelly is made by steeping the parings in the juices of the deer's stomach, and then pouring boiling water on the substance. The glue thus obtained is used where great tenacity is required, as in making bows and snow-shoes, and a horn is often unceremoniously severed from the head of a living deer, when the supply is deficient. The horns of reindeer slaughtered in the spring, when they are soft, are collected by enterprising Cossacks and forwarded to the Chinese frontier, where they meet with a ready sale, the Celestial gourmands esteeming the jelly a great delicacy.

In addition to the animals I have already mentioned, the southern part of Siberia, more particularly in the neighbourhood of the Khanates, is inhabited by the wild boar, and not infrequently by a more terrible antagonist—the tiger. In the museum at Barnaul are preserved the skins of four tigers, killed at various places within a short distance of that town; but that they are exceedingly rare is evidenced by the fact that the peasantry do not even know them by name, and on one occasion when an animal of this description made his appearance the country people were unaware of the powerful enemy with whom they had to contend, and life was lost in consequence. Mentioning the fact that they are sometimes

driven by hunger from the Steppe to the northern side of the Irtysh, Mr. Atkinson says: "The last was discovered early one morning lying on the top of a small hay-rick, near the village, by a peasant, going to fetch hay for his horses, who beheld with wonder and alarm the formidable beast crouching with glaring eyes; at the same moment his dog, catching sight of him, gave a loud bark and dashed towards the rick. With a fearful growl the tiger sprung to the ground; the dog met him without fear, but was crushed in a moment. The man ran towards the village, where he gave the alarm, and presently returned with a group of friends—three armed with pea-rifles, others with hay-forks and axes; and they were followed by several dogs. On approaching the rick they were made acquainted with the position of the enemy by a furious growl; the dogs charged instantly; he, however, only crouched, and did not spring. One of the men then sent a small ball through his hide, which roused him, and at one bound he threw himself among the dogs, killing two in an instant by strokes from his terrible paws; the rest retreated towards their masters. Two other balls pierced his body but only enraged him, without stopping his bounds; and at the next spring he was in the midst of the group,—struck down one man and held him in his grasp. The dogs again rushed at him, and the peasants stabbed him in the back and sides

with their hay-forks. This and the shouting caused him to leave his victim, and retreat slowly towards a bank partly covered with some thick bushes,—the dogs barking in his rear, followed by the men. On reaching the bank he faced round, gave some fearful growls, and crouched for a spring, which caused both dogs and men to halt. His position was such that he could not be assailed except in front. Other shots were now fired, but without effect, and the dogs kept up a furious barking at no great distance; yet he would not come out. As the man whom he had struck down was dead, his assailants kept at a respectful distance. However, after watching and consulting some time in what manner to make another attack, the dogs began to close in, when it was perceived that their antagonist did not move. One of the men then went nearer, and finally discovered that the beast was dead,—a ball having pierced him in a vital part. He was accordingly dragged out, and proved to be a full-grown male tiger."

In the vicinity of the Amur and its tributaries these animals are not uncommon, and the severity of the climate seems in no way to detract from the ferocity common to the species. As the man-eater of the sultry Hindustan plains so is its stealthy and cruel congener in the higher latitudes. A large tiger on the Usuri killed two men, and attacked a third, within the space of a single month.

The Cossack officer commanding a neighbouring outpost set off with a friend to the scene of the depredations, and with much difficulty persuaded some of the natives to act as guides. They camped for the night on the banks of the river, and, on the following morning, whilst breakfast was preparing, one of the natives went to a little pond near at hand, and wading in stood motionless as a bronze statue, his spear poised aloft and his keen eyes fixed on the water before him. The Cossack and his companion watched with great curiosity the skill displayed by this man. Not a movement indicated that life inhabited the dusky figure, until, with lightning rapidity, the spear was launched forward, and as quickly withdrawn, a fine salmon quivering on its barbed point. Three times in twenty minutes was this operation performed and each time a fish rewarded the native's skill, then, returning to the shore, he gathered up his finny spoil and scrambled up the bank to return to camp. But other eyes than those of the Cossack and his friend had watched the whole proceeding, and before the man had taken six paces homewards, a tiger darted out from the underbush, and seizing the unhappy fisherman bore him away in his mouth, as easily as a cat would carry off a mouse. The spectators uttered a cry of horror and astonishment, but the victim neither screamed nor struggled; the terror of the situation had deprived him of his senses.

The Cossack and his friend followed up the animal and killed it, although the former came within reach of the dying brute's claws, and sustained injuries that lamed him for several months. The fisherman was found quite dead, but the traces of mutilation were very slight, and the features betrayed no sign of suffering. His friends insisted on burying the body at the spot to which the tiger had brought it, such being their invariable custom in similar cases. They piled logs upon the grave, and performed many pagan ceremonies before leaving the spot for good. The skin of this animal was forwarded to the Emperor by its slayer.

That the tiger is to be found only in the torrid plains of Bengal is thus abundantly disproved, and that the animals appearing in Siberia are not mere casual visitors is evidenced by the fact that two huge chains of mountains, covered with perpetual snow, lie between the Himalayas and the great Northern Asian Plain. The Siberian tiger must therefore be indigenous to the country north of the Thian Shan Mountains, in lat. 42° N., and freely visits even a more inclement region. The highest latitude at which the animal has been killed is $52\frac{1}{4}^{\circ}$ N., on the Lena, where the climate is colder than that of St. Petersburg or Stockholm.*

* Humboldt, "Fragmens de Géologie." Tome II. p. 388.

Siberian Ornithology and Ichthyology.

Doubtless when Mr. Seebohm, the enterprising ornithologist who accompanied Captain Wiggins to the Yenisei in 1877, gives the result of his labours to the world, our knowledge of Siberian birds will be largely increased, but at present I find little to warrant me in inflicting a long list of buntings and finches upon the most indulgent reader. Amongst the game birds we find blackcock, pheasants, partridges, snipe, and wild fowl innumerable; and amongst the fish, salmon, sturgeon, grayling, and pike. Many of the Siberian fish are as yet known only by their Russian names, but I present a few remarks on the basins of the Obi and Yenisei, taken from a paper read by M. Sideroff at a meeting of the Society for the Encouragement of Russian Commerce and Industry, which was convened in March, 1876, in honour of the German travellers, Drs. Finsch and Brehm, and Count Waldburg Zeil. The information imparted in this address is of great general interest, besides conveying a very accurate idea of the principal birds and fish of the great rivers.

The author touched first upon the town of Barnaul, on the Obi, where the climate is so temperate that many kinds of cereals and vegetables, including melons, flourish; and from the facilities offered for purchasing provisions

the town presents many advantages as a starting point for an expedition. At Beresov, situated at the junction of the Obi and Soswa in 64 N. lat. are found a large number of herrings, captured in the latter river, of a peculiar species unknown in other Siberian waters. Further north, nearer the mouth of the Obi, sturgeons abound, and a valuable glutinous substance obtained from them, whilst pike, perch, Siberian salmon, bream, herring, and many other kinds of fish are common. He says: "In fact the Obi is the most favourable stream for studying the fishes of Siberia, and the mouth is the best part of the river, as the fishes all make for the sea or for the neighbouring streams when the winter sets in, a circumstance which has not as yet been satisfactorily accounted for. During the winter a hole need only be made in the ice to enable all the fish in the vicinity to be caught. As soon as the ice begins to break up, the fishes commence to ascend the river, seeking the deeper water until the rays of the sun begin to warm the water; when all, except the sturgeon, sterlet, and salmon, seek the flat depressions adjoining the rivers, which in spring are under water, and there they seek their food until the waters here begin to retire into their normal channel. As soon as the fishermen perceive this to be the case, they shut off the escape channels of these depressions by sluices, and catch the fish in small nets. Sometimes

the quantity caught is so great that the sluices are actually broken down by the accumulation of fish. When a sudden and severe frost occurs in spring-time, the effect is to freeze all the shallow water alongside of the banks. This is in turn covered by the waters from the upper course of the river, and these loosen the fragments of ice frozen to the banks, and retiring in their turn leave an enormous quantity of fish upon the ice, a large portion of which the Samoyedes have not strength to collect, and which is, in consequence, carried out to sea, a prey to birds and beasts of prey." *

The Gulf of Obi abounds also in walruses and seals, while reindeer are very plentiful, but these animals are subjected to the ravages of a fatal contagious disease, which, in some instances, extends itself even to men. Amongst birds, swans, geese, ducks, mews, and most of the Arctic fowl are found. The riparian settlers, particularly at the mouth of the Obi, are engaged entirely in fishing during the season, which lasts from the beginning of July until October.

The natural history of the Yenisei was fully investigated by Dr. Théel and his companions in the expedition to that river in 1876, the cost of which was defrayed by Mr. Oscar Dickson, of Gothenburg, with whose name we shall be brought into contact later on, when I describe the progress

* "The Geographical Magazine." Vol. III. p. 209.

of modern exploration. Dr. Théel writes to this gentleman : "The Jenissei has a length of about 1,660 English miles below Krasnojarsk. The banks are sometimes pretty high and bold, sometimes low, alternating in this respect with each other, so that, when the left is high, the right is the opposite. Where the bank is low and exposed to inundations willows thrive beyond everything. The high banks are clothed with *Pinus obovata* and *cembra*, and larch. At Jeniseisk the river is about $1\frac{1}{2}$ versts broad, gradually widening northwards, till at Kurejka it is five versts broad. Between Tolstonos and Goltshika the river widens and assumes the appearance of a lake more than sixty versts wide. Here the tides are quite observable. At Dudinskoj a depth reaching twelve fathoms was found."

"The Russian population of the Jenissei Valley is very sparse and uncivilised, and inferior, as far as the fine arts are concerned, to some of the Asiatic races. Cattle-rearing is in its infancy, though there are perhaps few regions more suited for it than the valley of the Jenissei. Cows are met with as far as Dudinskoj, but their proper management did not appear to be understood. At villages on the upper Jenissei, with as many as forty or fifty cows, a glass of milk could scarcely be obtained. The making of cheese is completely unknown, the making of butter nearly so. There are horses as far north as

Dudinskoi, sheep only to Vorogova, and no goats north of Jeniseisk. Cultivation is at a still lower standpoint, rye not being at present grown below Antsiferova, sixty-seven versts north of Jeniseisk, and oats to Zotina, 60 55' N. lat. Potatoes are grown to Turuchansk, but are there very small."

"Fish forms the principal food of the people, and during summer nearly every one is a fisher. Fishing is carried on with various kinds of nets, with lines and hooks, and even with leister and torch. There are found in the Jenissei pike, ruffe, perch, burbot, *Cyprinus curassius*, tench, *Thymallus vulgaris*, several species of the family *Leuciscus*, among them one which strongly resembles our common roach, a kind of *Petromyzon*, *Gasterosteus pungitius*, a kind of bullhead (*Cottus*), &c. All these are of inferior importance for domestic use, and mostly serve as food for the dogs. The more valuable are the sturgeon, salmon, and coregonus. There are two varieties of sturgeon, the common sturgeon or 'Ossetrina,' *Accipiter sturio*, and the sterlet, *Ac. ruthenus*. The *Ossetrina* is caught along the whole Jenissei, and sometimes reaches a weight of 225 lbs. The sterlet is not found north of Dudinskoi, and commonly weighs 3 or 4 lbs., but sometimes reaches 18 lbs. There is another called the prickly sturgeon, 'Kosterska,' believed to be the young of the *Ossetrina*. There are many varieties and transition forms

of sturgeon, rendering their proper classification difficult. The salmon is most numerous in the upper course of the river at Minousinsk, where a profitable fishery is carried on. Two types are distinguished, 'Tajmen' and 'Kun-schja.' The former is caught in greatest numbers in the upper course of the river, and weighs 40 to 60 lbs.; the latter is found in lakes on the *tundra*, and very seldom in the Jenissei below Dudinskoj. At the Nichandrovska Islands, a salmon, probably a Tajmen, was caught, which was nearly five feet long and weighed between 80 and 100 lbs. Of the *Coregonus* the following species were found in the Jenissei:—Njelma (*C. leucichthys*), Tschir (*C. nasutus*), Muksun (*C. muksun*), Peljedka (*C. pellet*), Omul (*C. omul*), Common Siklöja or Seldj (*C. albula*?)”

“The common *Coregonus* is said to be found in the Jenissei the whole year round. The Tschir, Njelma, and Muksun are seen almost simultaneously in early spring, the Tschir first beginning to ascend, and then the other two almost simultaneously, or the Njelma rather earlier. Finally masses of the Siklöja, and last of the Omul, make their appearance. These seldom go above the rapids between Podkamennoje Tunguska, and Asinova. There is no accurate information about the *Pellet*, but it does not appear to go far from the mouth of the river.”

“The bird world was sparingly represented on the Jenissei. In the south the *Passeres* were most numerous.

In the neighbourhood of the limit of trees on the *tundra* and at Brischovska and Nichandrovska Islands the swimming birds and waders first became more numerous. *Colymbus septentrionalis*, *Harelda glacialis*, *Oidemia fusca* and *nigra*. *Fuligula marila*, *Anas Penelope* and *acuta*, and *Cygnus bewickii* occurred here in great numbers, but with a few others were the only species of the order *Natatores* that could be found in those northern regions. A number of birds, for instance geese, *Anser segetum* and *albifrons*, and swans, occur first at the period of migration in autumn, when the uncommon red-necked goose, *Anser ruficollis*, is also met with not unfrequently. Altogether 140 to 150 species, of which only fifteen to twenty were extra-Scandinavian, have been observed during the summer, among them about twenty-five *Natatores* and twenty *Raptores*. It is singular that, for instance at Tolstonos, 69 55' N. lat., accordingly beyond the limit of trees, many small birds belonging to the order *Passeres* occur. Schmidt there found ten species, to which number we are able to add four more, viz., *Fringilla linaria*, *Emberiza pusilla*, *Saxicola cunanthæ*, and *Phyllopneuste trochilus*. A number of birds in Siberia are found drawing more and more to the west. It is stated, for instance, that the species *Alauda alpestris*, *Emberiza rustica* and *pusilla*, &c., which formerly could only be met with in Siberia or Eastern Russia, are now found in Finland and Western Russia,

and indeed even in Scandinavia. In the time of Pallas the Ural formed the western limit of the *Emberiza aureola*, which is now common in the whole north of Russia. It is therefore not impossible that part of the birds now peculiar to North Russia and Siberia may in the future belong to the fauna of Sweden.*

Doctor Thélé proceeds to deal with the insects and mosses of the Yenisei, but for information on that subject I shall refer the reader to the columns of "Nature." The above lengthy extract will point out to the student of natural history what description of birds and fishes he will encounter if he studies the ornithology and ichthyology of Siberia.

During the summer snipe are very plentiful throughout the marsh lands; a friend of Mr. Atkinson's shot seventy-two of these birds in three hours and a half! In the autumn feathered game is very abundant; during August the tetery or blackcock rewards the sportsman, and in September the reptchicks, or tree-partridges arrive. Blackcock are shot in the following manner. When the first snow has fallen the sportsman prepares a sledge, nearly filled with straw, upon which he sits whilst his coachman drives into the forest, where, by keeping a good look-out, the game is soon discovered perched upon the spreading boughs of the cedar or fir trees. The man

* "Nature." Vol. XVI. p. 367.

drives gently forward and pulls up when within easy rifle shot, whereupon his master selects the lowest bird and fires. If the bullet takes effect the remainder of the brood sit wonderingly staring at their fallen companion, of which stupidity the sportsman takes advantage by loading his weapon, and dropping the next lowest bird. Three can often be secured out of a single tree by this method, but the rifle must be of very small bore, and the charge of powder so light as to make but little report. When the blackcock eventually awakes to a sense of danger, and takes wing, the game are collected and the sleigh drives on until another flock is sighted, when the operation is repeated. From fifteen to twenty brace can be bagged in this manner by a good shot.

The Kirghiz, who are very fond of falconry, tame a very powerful eagle, known as the bearcoote, and employ it in striking down deer. This bird has a most marvellous rapidity of flight, and unless the quarry can escape to cover, its doom is certain. Even the wolf falls a victim to its powerful beak and claws; and when the Kirghiz hunt with the bearcoote, not a dog is allowed to accompany the cavalcade, for the bird would attack and destroy them to a certainty.

All the Siberian rivers may be said to teem with fish, and the inland sheets of water are also, commonly, well furnished. In Lake Baikal, notwithstanding its low

temperature, fish are abundant and in considerable variety. Amongst these the most remarkable is a fish called the *golomain* (*Callyonimus Baicalensis*), which dwells in the deepest part of the lake, and has never been captured, or, I believe, seen alive. After a violent tempest, however, great numbers of dead *golomains* are cast up on the beach. Their peculiarity consists in the fact that they melt away into oil on the slightest application of fire, or beneath the rays of the sun. I have already mentioned that seals are found in this inland sea.

In Kamtchatka and the Amur district, when fish are plentiful, the dogs require no feeding, having quite sense enough to walk into the water, or stand on the bank, and capture a salmon breakfast for themselves; and what seems even more wonderful is that cows, usually so dainty in their tastes, learn also to live on dried fish, and are reported to keep in good condition on this unnatural diet. Sledge-dogs are almost invariably fed on dried fish when travelling, and the Koriaks, Tschuktschis, and other hyperborean tribes devour raw fish readily, and credit it with some medicinal quality which keeps scurvy at bay.

The Siberian Mammoth.

Before quitting the fauna of Northern Asia some few words are necessary concerning the remains of an extinct

species of both the elephant and rhinoceros which are found in the neighbourhood of the river Lena, and on the islands of the Frozen Ocean, lying northward of the continent.

Although a trade in mammoth ivory had been carried on between the Chinese and the wild tribes of Northern Asia for several hundred years, European naturalists seem to have taken little or no interest in the evidences of an extinct order of animals which these remains undeniably recorded. The bones of elephants had from time to time been discovered in different parts of Europe, but the *savants* of the day usually declared them to belong to a race of human beings now extinct. In 1577 some bones were turned up in the Canton of Lucerne, which Felix Plater, the celebrated physician of his day, pronounced to be those of a giant, to whom he ascribed the moderate height of nineteen feet. Blumenbach, on seeing the fragments, recognised them at once to have belonged to the elephant. In 1700, on the banks of the Necker, the last resting-place of a herd of elephants was found, and over sixty tusks rewarded the excavators. Those that remained entire were preserved, the broken pieces were consigned to the court physician of Wurtemberg, who pounded them up and administered them as a new and valuable specific in cases of stomachic derangement.

But rather more than a century ago, in the year 1771, there came under the notice of the great traveller and natural historian, Peter Simon Pallas, a discovery of surprising interest, which he carefully observed and has minutely recorded. In December of that year a party of Yakuts hunting on the Vilui, near the junction of that river with the Lena, discovered an unknown animal of great size, half buried in the sand, but still retaining its flesh, which was covered with a thick skin resembling tanned leather. The carcase was, however, too much decomposed to permit of more than the head and two feet being severed and forwarded to Irkutsk, where Pallas luckily saw them. The skin and tendons of the parts still preserved considerable flexibility, probably owing to the humidity of the earth; but the flesh exhaled a fetid ammoniacal odour. Circumstances compelling Pallas to cross Lake Baikal before the breaking up of the ice, he was unable to make careful drawings of the remains, but he directed his attendants to place them upon a furnace, leaving orders that they should be dried by slow degrees, and with great care, to successfully dissipate the viscous matter. In this process—conducted during the naturalist's absence—some of the specimens were damaged, but the head and the extremity of the hind foot remained intact.

“The Rhinoceros to which the members belonged,” he

says, "was neither large for its species nor advanced in age, as the bones of the head attest, yet it was evidently an adult from the comparison made of the size of the cranium as compared with that of others of the same species 'more aged, which were afterwards found in a fossil state in divers parts of Siberia. The entire length of the head, from the upper part of the nape of the neck to the extremity of the denuded bone of the jaw, was thirty inches; the horns were not with the head, but we could still see evident vestiges of two horns, the nasal and frontal."

"The skin which covers the greater part of the head is, in the dried state, a tenacious, fibrous substance, like curried leather, of a brownish black on the outside and white in the inside; when burnt, it had the odour of common leather; the mouth, in the place where lips should have been soft and fleshy, was putrid and much lacerated; the extremities of the maxillary bone were bare. Upon the left side, which had probably been longest exposed to the air, the skin was here and there decomposed and rubbed on the surface, nevertheless the greater part of the mouth was so well preserved on the right side that the pores, or little holes from which doubtless the hairs had fallen, were still visible all over that side, and even in front."

"What was most astonishing, however, was the fact

that the skin which covered the orbits of the eyes, and formed the eyelids, was so well preserved and so healthy that the openings of the eyelids could be seen, though deformed and scarcely penetrable to the finger; the skin which surrounded the orbits, though desiccated, formed circular furrows. The cavities of the eyes were filled with matter, either argillaceous or animal, such as still occupied a part of the cavity of the cranium. Under the skin the fibres and tendons still remained, and above all the remains of the temporal muscles: finally, in the throat hung large bundles of muscular fibres."

"The foot which remains to me, and which, if I am not mistaken, belongs to the left hind limb, has not only preserved its skin quite intact, and furnished with hairs, or their roots, as well as the tendons and ligaments of the heel in all their strength, but, also, the skin itself quite whole as far as the bend in the knee. The place of the muscles was filled with black mud. The extremity of the foot is cloven into three angles, the bony parts of which, with the periosteum, still remain here and there; the horny hoofs had been detached. The hairs adhering in many places to the skin were from one to three lines in length, tolerably stiff, and ash-coloured. What remains of it proves that the foot was covered with bunches of hair, which hung down."

“We have never, so far as I know, observed so much hair on any rhinoceros which has been brought to Europe in our times, as appears to have been presented by the head and feet we have described. I leave you then to decide whether our rhinoceros of the Lena was born, or not, in the temperate climate of Central Asia. In fact, the rhinoceros, as I gather from the relations of travellers, belongs to the forests of Northern India ; and it is likely enough that these animals differ in a more hairy skin from those which live in the burning zones of Africa, just in the same way that other animals of a hotter climate are less warmly covered than those of the same genera in temperate countries.”*

An old Russian traveller, named Isbrant Ides, who traversed the Chinese Empire towards the close of the seventeenth century, says : “In the mountains which lie to the north-east of the River Kata we found the teeth and bones of the Mammoth ; they were found on the banks of the rivers Jenizea, Trugan, Mungazea, and the Lena, in the environs of the city of Yakutskoi, and up to the Frozen Ocean. All these rivers pass across mountains, of which we shall have occasion to speak, and in the season of thawing their course is so impetuous that they tear up the mountains and sweep with their waters masses of earth of prodigious size. The masses of earth de-

* “*Commentarii Academiae Petersburgicae*, 1773.”

posited by these inundations remain on the banks, and becoming dry, we find in the middle of them the teeth of the mammoth, and sometimes even the mammoth entire. A traveller who lived with me in China, and who employed a whole year in seeking for their teeth, assured me that he once found in a piece of frozen earth the head of one of these animals, with the flesh decomposed, with the tusks attached to the muzzle like those of the elephants, and that he and his companions had great trouble in extracting them, as well as in separating some of the bones of the head, and among others that of the neck, which was still stained with blood; that having, finally, searched further into the same mass of earth, he found there a frozen foot of monstrous size, which he carried to the city of Tragen. This foot was, from what the traveller told me, of the circumference of a large man about the middle of the body."

Isbrant Ides goes on to say that the native races assert that the mammoths lived in spacious caverns which they never quitted, and that these animals died the moment they were exposed to the rays of the light. The skeletons and carcasses found on the banks of the Lena they attribute to their former owners having been rash enough to emerge from the obscurity of their underground retreats.

The report of the old Russian traveller was naturally regarded as extremely suspicious, more especially as his information was not at first-hand, but derived from a companion who might very probably have been practising on his credulity; but the closing year of the eighteenth century witnessed a discovery which showed that Isbrant Ides' record was not only within the limits of possibility, but that, in all probability, it was the simple truth accurately conveyed.

In 1800, Gabriel Sarytscheff, a Russian naturalist, travelling in Northern Siberia, found upon the banks of the Alasœia, the body of a mammoth, enveloped in a mass of ice, and consequently in a complete state of preservation, for by the total exclusion of the air decomposition had been prevented. The carcase was covered with flesh, as well as with the entire hide, to which long hairs adhered in certain places. By a curious freak the rolling water had planted the animal nearly erect on its four feet.

In 1799, a Tungoose observed amongst the icebergs at the mouth of the Lena an odd-shaped block, and during the following year he perceived that the mass was more disengaged, though no suspicion of what it contained had yet dawned upon him. Towards the end of 1803 the ice had disappeared sufficiently to permit of the man's discovering the flank and tusks of a mammoth

protruding from the block, but it was not until the fifth year that the mass became stranded on a bed of sand, whereupon the fisherman removed the tusks, unconscious of the priceless treasure he was mutilating. This was in March, 1805, and it was not until two years later that Mr. Adams, of the St. Petersburg Academy, having been informed of the circumstance at Yakutsk, betook himself to the place, and found the carcase in a mangled condition, the natives having carried away huge pieces to feed their dogs, whilst bears, wolves, and other beasts of prey had also helped themselves freely. Nevertheless the skeleton remained almost perfect, with the exception of one fore foot. The spine of the back, the pelvis, and the limbs were still connected by the tough ligaments and by portions of the hide. The head was found to be covered with a dry skin; the ears furnished with a tuft of hair; whilst the balls of the eyes were still distinguishable. The brain, though dried up, occupied its proper position in the cranium; on the top of the neck was placed a flowing mane; and the skin was clothed with tufts of black hair and reddish wool. Of the latter upwards of thirty pounds weight was collected from the wet sand where the white bears had buried it whilst devouring the flesh.

Mr. Adams preserved every bone and hair of this precious relic, and transported them to Yakutsk, where

he was lucky enough to succeed in purchasing the missing tusks. The Emperor of Russia finally became the possessor of this noble specimen, and it is deposited in the St. Petersburg Museum, being the finest specimen of the *Elephas primigenius* known to exist.

M. Middendorf, in 1843, found a mammoth on the Taz, between the Obi and the Yenisei, in lat. 66 30' N., with some of the flesh in so perfect a condition that it was found possible to remove the ball of the eye, which is preserved in the museum at Moscow.

Again, in 1866, many skeletons of mammoths were found in the flat country near the delta of the Yenisei; and in 1870 an expedition to the Indijirka found the skin, hair, and bones of the giant pachyderm at two points of the river, within seventy miles of the Arctic Ocean.

All travellers and writers bear testimony to the immense quantities of fossil bones that are to be found throughout the frozen regions of Siberia; some of the reports, indeed, seem almost incredible. Pallas says, "There is not in the whole of Asiatic Russia, from the Don to the extremity of the Tchutchian promontory, any brook or river, especially of those which flow in the plains, on the banks of which some bones of elephants and other animals foreign to the climate have not been found. But in the more elevated regions, the primitive and schistose

chains, they are wanting, as are marine petrifications. But in the lower slopes and in the great muddy and sandy plains, above all in the places which are swept by rivers and brooks, they are always found, which proves that we should not the less find them throughout the whole extent of the country if we had the same means of searching for them." According to Billings, as presented to us by Martin Sauer, secretary to the expedition, the Arctic Islands abound with ivory and other remains. He says, "All the island nearest to the mainland, which is about thirty-six leagues in length, except three or four small rocky mountains, is a mixture of sand and ice, so that when the thaw sets in, and its banks begin to fall, many mammoth bones are found. All the isle is formed of the bones of this extraordinary animal, of the horns and crania of buffaloes, or of an animal which resembles them, and of some horns of rhinoceros."

That immense quantities of ivory are found on these islands, and that the natives make a trade of collecting it and disposing of it to the Russians, is beyond dispute. The latter also make frequent sledge journeys themselves, and all agree in saying that the supply is inexhaustible. Figuiet tells us that "New Siberia and the Isle of Lachou are, for the most part, only an agglomeration of sand, ice, and elephants' teeth. At every tempest, the sea casts ashore new quantities of mammoths' tusks, and the in-

habitants of Siberia carry on a profitable commerce in this fossil ivory. Every year, towards the summer, innumerable fishermen's barques direct their course towards this *isle of bones*; and, during winter, immense caravans take the same route—all the convoys drawn by dogs—returning charged with the tusks of the mammoth, each weighing from one hundred and fifty to two hundred pounds. The fossil ivory thus withdrawn from the frozen north is imported into China and Europe, where it is employed for the same purposes as ordinary ivory, which is furnished, as we know, by the existing elephant and hippopotamus of Africa and Asia."

"The *Isle of Bones* has served as a quarry of this valuable material, for export to China, for five hundred years; and it has been exported to Europe for upwards of a hundred. But the supply from these strange mines remains undiminished. What a number of accumulated generations of these bones and tusks does not this profusion imply!"*

And how did this enormous animal find its way to the spot where its remains are now discovered—to a region unparalleled for dreariness, where even the moss-eating reindeer finds it difficult to sustain itself? This question the reader will naturally ask, and I must refer him for an explanation to the works of Professor Owen, Sir Charles

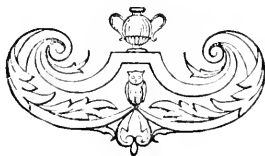
* Figuier's "World before the Deluge," p. 340.

Lyell, and other eminent geologists. The soil at the town of Yakutsk is permanently frozen to the depth of 400 feet, and M. Middendorf, after boring through frozen soil to a depth of 70 feet, came upon solid, pure and transparent ice, the thickness of which he did not attempt to ascertain. The least scientific reader will readily comprehend that even such an enormous mass of flesh as the mammoth would remain imperishable if imbedded in this icy soil. Whether in the days long gone by the climate was milder, or whether, as Professor Owen thinks, the mammoth was an animal able to subsist on trees and shrubs, and so warmly clad as to make it "a meet companion for the reindeer"; whether these huge animals migrated in summer; or whether they have been carried to their present position, I am quite unable to say, but close this section of the book by quoting Sir Charles Lyell's observation, which in my humble opinion explains the method by which the presence of these animals in Siberia can be satisfactorily accounted for. The great geologist says: "The late Sir John Richardson informed me, that in the northern parts of America, comprising regions now inhabited by many herbivorous quadrupeds, the drift snow is often converted into permanent masses of ice. This snow is commonly blown over the edges of steep cliffs, so as to form an inclined talus hundreds of feet high; and, when a thaw com-

mences, torrents rush from the land, and throw down from the top of the cliff alluvial soil and gravel. This new soil soon becomes covered with vegetation, and protects the foundation of snow from the rays of the sun. Water occasionally penetrates into the crevices and pores of the snow ; but as soon as it freezes it serves the more effectively to consolidate the mass into compact ice. It may sometimes happen that cattle grazing in a valley at the base of such cliffs, on the borders of a river, may be overwhelmed by drift snow, and at length inclosed in solid ice, and then transported towards the polar regions. Or a herd of mammoths, returning from their summer pastures in the north, may have been surprised, while crossing a stream, by the sudden congelation of the waters. The missionary Huc relates, in his *Travels in Tibet* in 1846, that, after many of his party had been frozen to death, the survivors pitched their tents on the banks of the Mourouri-Ousson (which lower down becomes the famous Blue River), and saw from their encampment ‘some black shapeless objects ranged in file across the stream. As they advanced nearer, no change either in form or distinctness was apparent ; nor was it till they were quite close, that they recognised in them a troop of the wild oxen called Yak by the Tibetans. There were more than fifty of them encrusted in the ice. No doubt they had tried to swim across at the moment

of congelation, and had been unable to disengage themselves. Their beautiful heads, surmounted by huge horns, were still above the surface, but their bodies were held fast in the ice, which was so transparent that the position of the imprudent beasts was easily distinguishable; they looked as if still swimming, but the eagles and ravens had pecked out their eyes.' " *

* Lyell's "Principles of Geology." Eleventh Edition. Vol. I., p. 187.





CHAPTER VI.

SIBERIAN FLORA.

THE most striking characteristic of the Northern Asian Flora, is the predominance of Coniferous trees in the forests, giving place northward to the birch and alder, and generally alternating with willows where the soil is moist. To the northward of the Polar limit, roughly corresponding with the Arctic Circle, on which it slightly impinges, lies the tundra, clothed with lichens and various mosses. To give an exhaustive account of the numerous conifers found in the Siberian woods, would occupy more space than I have at my disposal, I shall therefore content myself with noticing some of the most remarkable amongst them.

The *Pinus cembra*, or Siberian cedar, is one of the most beautiful forest trees indigenous to this region, attaining an enormous height, and flourishing even where the ground is perpetually frozen. From this forest giant

are gathered the nuts with which the pockets of every young lady are usually filled, for not being permitted to talk at evening parties, the junior members of the fair sex find employment for their mouths in devouring cedar nuts, which Ermann rather ungallantly says are better fitted for squirrels than for human beings. In some of the more populous parts of Siberia, the rage for these nuts is so excessive as to endanger the future existence of the plantations, magnificent trees being recklessly felled merely for the sake of their fruit.

The larch is highly valued for its power of resisting the effects of moisture, and for emitting a high degree of heat, but it is unsuitable for the manufacture of charcoal. These trees seem more liable to be struck by lightning than any of their forest brethren, probably from the fact that they occupy more isolated positions. In speaking of the Ostiaks I shall have occasion to refer to the ingenious manner in which they make larch-wood serve the purposes of table napkins.

Frequent conflagrations work great havoc in the Siberian forests, the flames spreading rapidly amongst the resinous branches of the pine species, and when one of these accidents occurs in the vicinity of a settlement, the inhabitants of which depend on hunting for their existence, it is justly regarded as a great calamity, more particularly as, in place of the noble pines amidst whose

gloomy recesses the sable loves to dwell, only birches and aspens appear to replace the charred trunks. Nothing but a heavy fall of rain is able to check these forest fires, which the Russians attribute either to lightning, or to the friction caused by high winds. The carelessness of wandering hunters is more probably their cause. The Buriates have a legend that the Russian conquest was foretold by a fire destroying the black pine forests, whereupon the white birch sprang to life; the latter tree typifying the Muscovites, the black pine the swarthy natives.

In the north-eastern part of Siberia is found a species of creeping pine, peculiar from the fact that in winter it bows itself down sufficiently to be wholly undistinguishable beneath the snow, but in the spring re-assumes an upright position. It is a variety of the *Pinus cembra*, bearing a similar, though much smaller nut, which is valued by the Russians.

The Bird-cherry (*Prunus padus*) is indigenous to Siberia, yielding a fruit from which a thick juice is expressed, and used either as a beverage, or, when kneaded into cakes, as food. This fact is mentioned by old Herodotus.* Amongst some tribes it forms an important article of vegetable diet.

From the lime-tree a large supply of bast is obtained,

* Herod., Lib. IV. c. 23.

which the natives make into mats and cordage ; but for fishing nets, twine made from the common nettle is generally employed. On the Amoor this plant is seen in the vicinity of every hut. It is cut down in the autumn, well soaked, and hung up to dry during the winter ; in the succeeding spring the fibres are separated, and the women twist them into twine, from which, if necessary, ropes are made by the men. The white birch (*Betula Alba*) also comes into domestic use, for the bark, after being scraped and softened, is sewn together in strips, and forms a waterproof vegetable blanket.

To this list of forest trees we must add the Mountain Ash, which is pretty generally spread over the whole of Siberia ; from its berries the popular wine of the country, *Nalifka*, is made. Oaks of various species are found on the slopes of the Ural, and as far east as the mouth of the Amur ; but none of these are of much value as timber. The maple, as also the apple-tree, is not unfrequent towards the southern boundary of this region. In some parts the poplar flourishes vigorously, under circumstances which appear almost incredible. Mr. Atkinson describes a group of these trees in one of the valleys of the Altaï retaining their vitality, though buried to a depth of twenty-five feet in frozen snow.

The Russian women make many very palatable beverages from wild fruits, the most agreeable being compounded

from the dwarf crimson bramble (*Rubus arcticus*), which is said to be far superior to the strawberry, and almost to equal the pineapple in richness of flavour. The cranberry (*Vaccinium oxycoccus*), the cloudberry (*Rubus chamemorus*), the raspberry (*R. idæus*), and the bilberry (*V. vitis idæa*), also claim their share of a good housewife's attention. *Quass*, a kind of beer, in great favour with the Russians, is manufactured from fermented corn.

In the more northerly regions, in addition to the mosses and lichens of the *Tundras*, different kinds of reeds, bulrushes, and sedges are met with, the most conspicuous, perhaps, of the flora being the crowberry (*empetrum*), and the wild marsh rosemary (*Ledum palustre*).

The extensive steppes which stretch into the districts bordering upon the Khanates and the northern slopes of the lofty range which bounds Siberia to the south, exhibit floral features which are more diversified, and therefore of greater interest to the botanist. Here, through the seasons of spring and summer, the plains and hill-slopes are covered with a verdant carpet. The *Primula*, *Violacea*, *Anemone*, *Aconitum*, *Delphinium*, *Aquilegia*, *Salvia*, *Dianthus*, *Gentiana*, various *Cypripeda*, with the *Geranium*, lend all their blossoms to beautify these desert wilds.

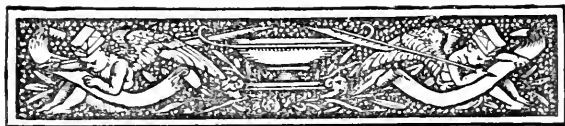
The gigantic Fennel (*Ferula gigantea*), which, within a few weeks' growth, attains a height of fourteen feet, and

the thickets of the wild raspberry—the favourite haunts of the bears now roused from their hybernal slumbers—form almost impenetrable jungles.

On the banks of the fresh-water pools grow in gay profusion different species of the *Iris* and *Nymphaea*, while on the arid borders of the salt-water lakes so plentifully scattered over the thinly peopled steppes, the *Salzola* relieves the wearied eye by its grateful verdure.

On the Amur and its tributaries, the Ginseng (*Panax ginseng*), called by the Chinese *Orhota*, and accredited by them with great medicinal virtues, is occasionally found. Modern Europeans are somewhat sceptical concerning the remedial qualities attributed to this root, but many of the old Jesuit fathers formerly residing in the Celestial Empire speak loudly in its praise.

The cereals grown are wheat, barley, rye, and buckwheat, but the agricultural areas having been mentioned in the geographical section, I shall not recapitulate them here. Enough wheat could easily be raised to supply the entire European market; how plentiful it is will be seen later on in the volume, under the head of Recent Explorations.



CHAPTER VII.

CLIMATE.

WITH the exception of Greenland and the Arctic Archipelago of North America, Siberia is the coldest country in the northern hemisphere, far more so, indeed, than parts of Europe situated in the same latitude. Thus, whilst the mean annual temperature of North Cape is $+32$, and even in winter is estimated at $+24$, Ustyansk, at the mouth of the river Yana, situated in a lower latitude, exhibits a mean annual temperature of only $4\cdot39$, and a mean winter temperature of $-24\cdot9$, showing some 28 difference between the two places. Western Siberia is less rigorous than the country lying further eastward. At Irkutsk, only a few minutes north of London, the quicksilver freezes during even a mild winter, whilst at Yakutsk, previously mentioned as the coldest city in the world, it remains congealed for two, and sometimes

three months in the year. Barnaul has a mean annual temperature of $+35\cdot13$; at Nishni-Kolymsk the thermometer averages $+12\cdot05$ throughout the year, and in January it sinks to -60 , when respiration becomes difficult, and the very reindeer, indigenous to that terrible climate, seeks the depths of the forest, and there stands subdued and motionless.

Mr. Bush gives the following results from his observations on the Anadyr River, in 1866—7 :—

	Maximum temp.		Minimum temp.		Mean temp.
October (1866)	+34	...	-10	...	+13'88
November	+28	...	-30	...	-7'64
December	+10	...	-54	...	-20'15
January (1867)	+26	...	-50	...	-10'5
February	+31	...	-62	...	-27'833
March	+33	...	-50	...	-1'70
April	+54	...	-40	...	+5'24
May	+59	...	+11	...	+33'75
June	+70	...	+34	...	+43'6

In June the Siberian winter generally breaks up with a rapidity quite wonderful. The snow disappears, the dreary wastes become carpeted with a thousand wild flowers, birds arrive in myriads, but with them, alas! the swarms of mosquitoes that during the spring goad man and beast to the verge of madness.

In August the night frosts recommence, and in a few weeks the brief Siberian summer is numbered with its predecessors.



CHAPTER VIII.

HISTORICAL SKETCH.

TH can scarcely be said that Siberia was known to the Russians before the middle of the sixteenth century, for although prior to that date an expedition had penetrated into the north-west parts of that country as far as the Obi, where several Tartar tribes were rendered tributary, this incursion was more predatory than civilising, and all its effects soon vanished; not before the reign of Ivan Vassilievitch II. did Siberia obtain a real position in Russian history.

At that period a Russian merchant, named Anika Stroganof, who had established some salt works at Solvytschegodskaia, a town in the government of Archangel, initiated a trade by barter with the inhabitants of north-western Siberia, who brought in valuable furs to the above-mentioned town, which they readily exchanged for toys and other trumpery of little value. When the

natives had disposed of their peltries and returned to their homes, Stroganof sent with them agents of his own, who not only saw the new country, but continued the traffic therein with so much advantage to their master that he rapidly amassed a very considerable fortune. This proceeding coming to the ears of the Czar, that monarch determined on enlarging the communication with Siberia opened by the merchant, and sent a corps of troops into the country who laid the Tartar tribes under contribution. These unfortunate people appear to have given no provocation for this hostile visitation ; they were ready enough to barter, but we may presume that they lacked civilisation, so the sword was unsheathed as the readiest instrument for teaching it. Kutchum Khan—a lineal descendant of the celebrated Genghis Khan—who ruled over those parts, punished the tribes who had paid contribution to Russia, and so the expedition ended. This inroad is stated to have occurred about the middle of the sixteenth century, for in 1558 the Czar Ivan Vassilievitch assumed the title of Lord of Siberia.

For some years the Russian monarch made no attempt to recover his lost authority in Asia ; but the course of events soon turned his attention to that quarter of the globe.

In recompense for having opened a trade with Siberia, the Czar had bestowed upon Stroganof large grants of

land in the neighbourhood of the River Kama, and here the merchant founded settlements or colonies, which led ultimately to the entire subjection of Siberia.

Ivan had extended his dominions as far as the Caspian Sea, in a south-easterly direction, and established commercial relations with Persia and Bokharia; but the caravans between these countries and Russia being invariably pillaged by the Don Cossacks—a horde of banditti inhabiting the banks of the river from whence they derive their name—the Czar attacked the freebooters, who were either slain, taken prisoners, or dispersed. The employment of pillaging peaceful merchants being thus rudely concluded, such of the robbers as escaped sought a change of quarters, and six thousand of them, under the command of a chief named Yermac Timofeeff, retired along the banks of the Kama, until they came to one of Stroganof's settlements, governed by his grandson Maxim, who, probably from his inability to resist these rude visitors, received them hospitably and entertained them during the dreary winter.

Siberia was at that time ruled over by a number of petty chiefs, most of whom acknowledged Kutchum Khan as their suzerain. This prince's dominions extended from the Obi to the Tobol, comprising that tract of country which now forms the south-western part of the province of Tobolsk; and his head-quarters were at Sibir,

a small fortress on the Irtysh, the ruins of which may still be seen. He was a resolute, energetic ruler, but seems to have alienated the affections of his pagan subjects by the persecuting zeal with which he introduced the Mahomedan religion.

Maxim Stroganof did not fail to point out the weak joints in the Tartar prince's harness to his predatory guest, who was chafing at a lengthened period of enforced inactivity, and Yermac soon made up his mind to subdue the whole territory, or perish in the attempt. Lawless marauder as this Don Cossack was, there is something chivalrous in the hardihood and self-confidence which prompted him to attack a powerful prince, with a few thousand undisciplined spearmen. What Cortez was to Spain, what Clive was to England, such was Yermac Timofeff, the bandit, to Russia; through his enterprise the whole of Northern Asia became an appanage of the Muscovite crown.

During the winter of 1577—8 the Cossack chief made his preparations and set forth in the spring, but untoward circumstances retarding his march, he was compelled to return to the settlement—Orel—much to the disgust of the Stroganofs, who flattered themselves that they had seen him for the last time. There he was, however, and they had to supply him and his troops with fresh provisions, muskets, ammunition, and such other stores as

he thought fit to demand. After draining the Stroganofs dry, Yermac, and his band started on the second adventure in June, 1579. The Cossacks numbered five thousand men, totally undisciplined, but fearless and obedient, and, above all, reposing the most implicit confidence in their chief. The latter had, whilst at Orel, manufactured and distributed amongst his followers colours ornamented with the images of saints, after the Russian fashion, and these, carried at the head of the different troops, gave them some resemblance to a regular army.

For eighteen long months the adventurous band struggled on, sometimes by land, whenever practicable by water, and at the end of that time found themselves advanced only to Tchingi, a small town upon the banks of the Tura. But fatigue, privation, and daily skirmishes had made sad havoc amongst their ranks, and when the roll was called but fifteen hundred effective men answered to their names, whilst before them stood Kutchum Khan resolved to defend his dominions to the last. Not for one moment did the Cossack chief hesitate, onward was the order given, and eastward the yellow-haired horsemen pressed, until they reached the very heart of the Tartar prince's kingdom, dispersing the various bands that he had detached to stay their progress.

But though ever victorious the Cossack loss in repelling

daily attacks was very great, and when at length the armies of the two chiefs stood face to face, that of Yermac numbered only five hundred men—of the whole body that had set forth from Orel nine-tenths had perished !

The rival forces met and the combat was most obstinate, but the discipline acquired by the Cossack remnant prevailed, and victory declared itself in their favour. The Tartars broke and fled, closely pursued by the conquerors, Kutchum Khan himself with difficulty escaping from the carnage that ensued. Yermac, the wandering freebooter, entered Sibir, and found himself suddenly transformed into a powerful prince. News of Kutchum Khan's crushing defeat spread with rapidity throughout the neighbouring Tartar tribes, who poured in from all quarters to tender their allegiance and submit to the conqueror's authority.

A Russian historian says : " Thus this enterprising Cossack was suddenly exalted from the station of a chief of banditti to the rank of a sovereign prince. It does not appear from history whether it were at first his design to conquer Siberia, or solely to amass a considerable booty. The latter, indeed, seems the most probable conjecture. The rapid tide of success with which he was carried on, and the entire defeat of Kutchum Khan, afterwards expanded his views, and opened a larger scene to his ambition. But whatever was his original projects, he

seems worthy, so far as intrepidity and prudence form a basis of merit, of the final success which flowed in upon him; for he was neither elated with unexpected prosperity nor dazzled with the sudden glare of royalty; on the contrary, the dignity of his deportment was as consistent and unaffected, as if he had been born a sovereign." * For a time Yermac and his followers enjoyed the reward which they had so dearly won, but peace was of short duration, and insurrections became frequent owing to the intrigues of Kutchum Khan, who still retained great influence over his late subjects. The Cossack chief seems to have been a prudent and far-seeing politician as well as a good general, and he saw at once that without support he must retire from his eminent position. His followers were now still further reduced, his new subjects were obviously faithless and unworthy of all trust; either he must obtain foreign assistance or retire from the struggle. To whom should he have recourse? Prudence immediately suggested the Czar of Muscovy.

Accordingly one of his trustiest followers was sent to Moscow with a small retinue of Cossacks. This ambassador was instructed to state the progress which the troop under Yermac had made in Siberia, which country had been conquered in his—the Czar's—name, and generally to explain matters so that it should appear as though the

* G. F. Muller, Historiographer of Russia.

Cossack leader had kept the honour and aggrandisement of his master clearly in view throughout the whole expedition ; a present of most valuable furs accompanied the embassy.

Yermac's follower was received at Moscow with every mark of satisfaction ; a public thanksgiving was celebrated in the cathedral ; the services of the Cossacks were extolled ; and their chief pardoned all his former offences, whilst presents were freely distributed amongst the freebooters, a fur robe which had been worn by the Czar himself—the greatest mark of distinction that could be conferred upon a subject—being sent to Yermac, together with a sum of money, and the promise of effectual and speedy assistance.

The Czar kept his word ; before long a reinforcement of five hundred Russians joined Yermac, which at once enabled him to vanquish several princes who had ventured to assert their independence. In one of these expeditions he besieged a small fortress on the banks of the Irtysh, which still belonged to Kutchum Khan, but the garrison, under the immediate command of that monarch, defended the entrenchments so bravely that Yermac's repeated assaults failed to carry them. Compelled to raise the siege he retreated towards Sibir, followed at a distance by the Tartar horde, who awaited some unguarded moment when their implacable enemy

might be advantageously attacked ; such opportunity soon presented itself.

The small band of three hundred Russians encamped for the night on an islet formed by two branches of the Irtysh. They were wearied by a long and fatiguing march, the presence of an enemy was unsuspected, the situation seemed in every way secure, so the tired men, abandoning their usual precautions, sought repose. Apprised by his spies of their situation, Kutchum Khan, with a select body of troops, stole down at midnight on his foes, and, having forded the river in silence, fell upon them with such complete success that the half-sleeping men were cut down before they could use their arms. The massacre was complete, but one man escaping to bear the news of the catastrophe to Siber, and amongst the victims was the gallant Cossack chief Yermac Timofeeff.

To the last moment of his life the quondam freebooter maintained the high renown that he had acquired, exhibiting the greatest presence of mind, exhorting and cheering his followers by precept and example, and finally, when his small band were hopelessly surrounded, cutting his way single-handed through the hostile ranks, and making for the banks of the Irtysh. Here the intrepid fugitive found a boat, into which he attempted to throw himself, but the distance between the shore and the place where it was moored proved too great, and he

fell into the water, when the weight of his armour immediately dragged him to the bottom.

So perished Yermac Timofeeff; a career of rapine and strife was terminated by the icy waters of that distant river; but we are forced into admiration of the man—his perseverance, indomitable energy, and the stubborn courage which sustained him throughout every vicissitude of his stormy life, and enabled him to initiate a course of Russian conquest, which, within a century, extended from the confines of Europe to the Pacific Ocean. His body was recovered from the stream and exposed to all the insults that Kutchum Khan's desire for revenge could suggest. But the tide soon turned, and before the victor had satisfied himself by heaping indignities upon the lifeless corpse, his Tartar chiefs showed the greatest indignation at such ungenerous ferocity. The rude virtues of their dead foe—his valour and magnanimity were remembered by men who could fully appreciate such qualities, and, after bitterly reproaching their leader, they interred Yermac's body with the sacrifices that formed part of their Pagan superstition, and proceeded to consecrate his memory. The historian quoted above tells us that "many stories were soon spread abroad, and met with implicit belief. The touch of his body was supposed to have been an instantaneous cure of all disorders; and even his clothes and arms were

said to be endowed with the same efficacy. A flame of fire was represented as sometimes hovering about his tomb, and sometimes as stretching in one luminous body from the same spot towards the heavens. A presiding influence over the affairs of the chase and of war was attributed to his departed spirit; and numbers resorted to his tomb to invoke his tutelary aid in concerns so interesting to uncivilised nations. These idle fables, though they evince the superstitious credulity of the Tartars, convey at the same time the strongest testimony of their veneration for the memory of Yermac; and this veneration greatly contributed to the subsequent progress of the Russians in those regions."

Upon the news of their leader's defeat and death reaching Sibir, the few soldiers composing its garrison retired, and Siberia was again free from Russian invaders; but their presence had unsettled the sovereign power of Kutchum Khan, and he recovered only a small part of the dominions he had lost, for numerous princes whom he had subjected availed themselves of the general confusion to assert their independence. Nevertheless, the Cossack chief had surely inserted the thin end of the wedge that was eventually to disrupt the petty principalities, and bring the whole of Northern Asia under the Muscovite rule. He had discovered routes by which troops could be moved easily and promptly across those

inhospitable regions, and by the rapidity of his conquests had taught the Russians to regard the Tartars in the light of an easy prey. The rough justice of his sway had disposed many of the tribes to look upon the Czar's rule with favour, and inclined them to renew their allegiance on the first opportunity ; others viewed resistance as unavailing, and prepared to bow their necks to the Russian yoke ; and, added to this the intestine commotions to which the country was then subjected, would assist in rendering it an easy prey. All these motives combined, induced the Court of Moscow to send another small expedition into Siberia, which encountered little opposition, and soon re-established the Russian authority. The arrival of fresh troops enabled them to extend their operations, and to erect strong fortresses at Tobolsk, Tara, and other places.

The stream of conquest now flowed eastward apace. In 1604 the town of Tomsk was founded, and proved a fresh starting point for adventurous spirits bent on subduing new country. Small parties pushed on to Lake Baikal, and from thence to the valley of the Lena, everywhere erecting stockades which gradually swelled into towns, and in all cases subduing the native tribes. In 1639 the Russians had reached the Sea of Okhotsk, and thus, without one rouble of expense to the Moscow Government, almost the whole of Northern Asia, from

Europe to the Pacific Ocean, and from the Arctic Regions to the frontiers of the Chinese Empire, had fallen beneath their sway, through the energy of a few adventurous Cossacks and traders. How far this system of annexation would have proceeded it is impossible to tell, probably the restless spirits of the age would have remained unsatisfied until the whole of Asia acknowledged the Czar as master, but another great power already existed on that continent, whose sovereign viewed the advance of Russia with undisguised disapproval, and for the time effectually checked it. This power was China.

Towards the middle of the seventeenth century, the Russians were overrunning the Amur provinces, subduing the native tribes and building a chain of fortresses along the river, of which the principal were Albasin and Kamarskoi Ostrog. This proceeding aroused the jealousies and fears of the Emperor of China, and hostilities commenced between the two nations in 1680, when the Chinese demolished all the Russian forts upon the Amur, and retired to their own country with a great number of prisoners. War continued on the frontier, success as a rule attending the Chinese arms, whilst negotiations for a lasting peace were tardily proceeding between the envoys of both nations. The ambassadors met for conference at Nertchinsk, on the River Shilka, where a treaty

was signed and sealed by the plenipotentiaries of the two courts. This important instrument laid the foundation of a steady commerce between the two empires, but it was a decided check to the progress of Russian conquest in that quarter.

By the terms of this treaty, which was executed on the 27th August, 1689, the boundaries between Russia and China were fixed—by no means in accordance with Russian wishes; and reciprocal liberty of trade was granted to such subjects of both empires as were provided with passports from their respective courts. The Russians were now cut off by a hard and fast line from making further encroachments, and shut out from the navigation of the Amur to boot—a loss to which little importance was then attached, but which became of serious moment after the discovery of Kamtchatka and of the islands lying between the Asiatic and American continents. By means of the river the produce of these countries could have been transported easily and cheaply to Europe, whereas, until the latter half of the present century, Chinese exclusiveness made the carriage of merchandise from Okhotsk westward a tedious and expensive business, the small rivers employed being difficult of navigation and the land portages lying over rugged and often impassable mountains. As I mentioned before, the Amur is now thrown open, and by river and

canal goods can reach the eastern slope of the Urals without much difficulty.

Although the treaty of Nertchinsk curtailed all further Muscovite encroachments, that nation obtained the concession at which they had long and unremittingly aimed—a regular and permanent trade with China, subject certainly to vexatious forms and restrictions, but still placing commerce on a more favourable basis than had ever hitherto existed, when the Chinese regarded their advances with jealousy and suspicion. From the commencement of the seventeenth century a slight intercourse between the two nations had existed, but during the hostilities on the Amur this was entirely suspended; the treaty of 1689, however, opened the gate to a traffic, which every year assumed greater magnitude and importance. Perceiving its advantage, Peter I. sent an envoy to Peking, requesting that the privilege of trading with China, then confined to individuals, should be extended to caravans, and the Emperor approving the change, large bands of traders visited the Chinese capital, their expenses at that city being defrayed from the Chinese privy purse. The right of sending these caravans, and all profits resulting from them, accrued to the crown of Russia.

For some years matters went on smoothly, and might have continued so but for the misconduct and drunken-

ness of the Russians, reports of which reaching the Emperor's ears, concurrently with a misunderstanding between the courts relative to a frontier tribe of Mongols, he issued an order in 1722 for the expulsion of all Muscovites from his dominions, and all intercourse was brought rigorously to a standstill.

Five years later (1727) a Russian envoy was dispatched to Peking with a new plan whereby the frontiers of the two empires should be rectified, and commercial relations re-established. The treaty of Kiachta, concluded 14th June, 1728, on the spot where the city of that name was afterwards built, resulted from this, and forms the basis whereon all transactions between the two nations were until recent times conducted. Its principal clauses stipulated that a caravan, of not more than two hundred persons, should visit Peking every three years, its members paying their own expenses. Furthermore, the merchandise of private individuals was excluded from crossing the frontier, but two places on the confines were appointed to which the subjects of each nation might bring their wares and dispose of them to each other. These free-trade towns are called Kiachta and Tsurukhaitu, and the former has now become the great centre of the Russian and Chinese commerce. In 1762 Catherine II. abolished the crown monopoly of the fur trade, together with the exclusive privilege of

sending caravans to Peking, a far-sighted concession which has greatly increased the traffic between the two empires.

The peninsula of Kamtchatka remained undiscovered by the Russians until the close of the seventeenth century, when a few Cossacks sent against the Koriaks by the officer in command at Anadyrsk continued their march until within four days' journey of the Kamtchatka River. During the following year (1697) further expeditions were made; the country as they advanced was conquered and colonised, and by 1711 the whole peninsula was brought under the dominion of Russia, who obtained little benefit from its possession beyond a few furs exacted from the inhabitants as tribute.





CHAPTER IX.

NATIVE RACES OF SIBERIA.

NOW propose to lay before the reader some account of the aboriginal or native races inhabiting Siberia, together with their manners, customs, religion, amusements, and every-day mode of life. Space prevents me from entering into a minute description of the various petty tribes—exceeding a score in number—into which the leading races are split up, neither would such detail be of much interest to the general reader, the habits of the offshoot tribes closely resembling those of the original stock from whence they sprung. I shall therefore confine myself to delineating the principal ethnological divisions at present existing in Siberia, commencing with the people inhabiting the eastern slope of the Ural Mountains, and working from thence eastward throughout the whole extent of the country.

The Voguls.

The Voguls, a portion of the Ugrian branch of the Turanian stock, inhabit the northern part of the Uralian Range, and the country to the eastward as far as the Irtysh and Tobol; the Soswa, a tributary of the Obi, may be regarded as their boundary towards the north. Formerly they extended further south and west, but Russian encroachments have driven them into the broken country which they now inhabit. The Voguls are conterminous with the Siranians on the west, the Obi Ostiaks on the east, and the Bashkirs on the south.

This people is small in stature, with the round broad face and prominent cheek-bones of the Mongols. They are a tribe of fishers and hunters, having little pasturage and no agriculture amongst them, except towards the south, where they have partially adopted the manners of their neighbours the Bashkirs. They have sundry regulations for the preservation of the game on which they chiefly subsist, and such rules are scrupulously observed. Thus they remain only a certain time in one encampment for the sake of sparing the wild animals, and they never allow more than five *yurts*, or huts, to be erected in one spot, which must also be at least fifteen versts from any other encampment, for the smoke from their dwellings dislodges the game.

The religion of the Voguls is Shamanism, or a very imperfect Christianity. The Russians endeavour to bring them within the pale of the Greek Church, but their efforts hitherto have been marked with little real success.

Horses are unknown amongst them, the numerous herds of reindeer that they possess supplying their requirements both for domestic and travelling purposes. The winter is their busy season; then they hunt and traffic their spoils in peltry with the Samöicides, Ostiaks, and Russians, extending their journeys as far as Obdorsk, and at the great fair held in that place, exchanging the produce of the chase for provisions and other necessities. They usually adopt the Russian dress; but their country is seldom penetrated by traders, and little is known concerning their habits when free from observation, as they are very uncommunicative, dreading lest the Russian authorities should attempt their conversion.

It may not be inexpedient that I should here mention the *yassak*, or annual tax, imposed by the Russian Government upon the native tribes throughout Siberia. This impost amounts in value to about two roubles for each male individual between the ages of fifteen and fifty, and is always collected in furs. Annually the agent visits the head-quarters of each tribe and selects as many of the best sable skins as are required to pay the tax assessed upon the community, taking them at one-half of their

market value. Thus the finest furs always fall into the hands of the Government and are usually reserved for the private use of the royal family. To steal a skin from the Government depôts is an offence so flagrant that death alone can expiate it !

When the winter is passed the Voguls lead a life of indolence, lolling about their yurts sleeping or smoking, and breathing an atmosphere that few European lungs could stand, for clouds of gnats compel them to fill their miserable huts with suffocating smoke which in a measure baffles the tormenting insects. Formerly they used as food any animal substance that fell in their way ; contact with Russians has now so far civilised them that they confine themselves to fish and reindeer flesh. They have a rude idea of weaving, manufacturing light summer clothing from a species of nettle, which they gather in the month of September.

The number of this race is very imperfectly known, but it is placed by the best authorities at something over one hundred thousand souls.

The Ostiaks.

The Ostiaks, also a portion of the Ugrian branch of the Turanian stock, inhabit the valley of the river Obi and extend eastward as far as the Yenisei, being conterminous with the Voguls on the west, the Samöicides on

the north, the Barabinsky and other Turkish tribes on the south, and the Yeniseians on the east. Like the Voguls they are a race of hunters and fishers, and although both tribes spring from the same stock they were in a state of continual warfare with each other at the time of the Russian conquest.

The Ostiaks are short in stature, with flat faces and reddish hair. Their clothing commonly consists of reindeer skin prepared from the animals before they have attained their full growth, and as the most essential articles of dress are precisely similar both for men and women, a stranger would find considerable difficulty in distinguishing the sexes, were it not for the veil wherewith the ladies hide their faces.

An Ostiak during the winter dresses himself in the following manner. First, a pair of short drawers made of curried reindeer skin, tight round the hips, and reaching downward to the knee. Then stockings of *peshki* (the pelt of very young reindeer fawns) with the hair next to the wearer's skin, which reach a few inches above the knee, where they are tied with thin leathern thongs. Next come the boots, made of old reindeer hide and extending to the same height as the stockings, but in these the hair is outside both on the leg and on the sole, pointing forward in the latter situation as to diminish the possibility of slipping on smooth ice or snow. The foot part of the

boot is wide and roomy, but round the leg and calf it fits tight, and to prevent its working down a leather strap is fastened from the boot to the girdle, and as a further precaution, woollen strings sewn on behind, immediately above the calf, are tied in front and render the whole doubly secure—for on the close fitting of his boot depends in a great measure the comfort of the wearer.

The clothing of the lower limbs being now completed, the Ostiak proceeds to don a *málitza*, a garment much resembling the French blouse, and worn by all the nations of northern Siberia. The *málitza* is formed from the skins of young deer (*neplú*) sewn together in a sack-like form, but having an opening to put the head through, and furnished with sleeves. The fur is turned inwards except at the hands, where the hair of the gloves is always outside. Ermann remarks, "It appears at first sight extraordinary too, that these hand coverings attached to the *málitza* are invariably made of the hardest and most inflexible portions of the reindeer hide, of the extremity of the leg of the full grown animal. But as in reindeer travelling, in fishing, and in the chase, the Ostiaks are often obliged to put their hands to rough and heavy work, they prefer a thick and strong covering for the extremities to one which is delicate and flexible. To allow the complete use of the fingers at fine work, there is a transverse slit at the under side of the glove,

through which they may be thrust so as to move at liberty without being altogether beyond protection."

Above the *málitza* is worn a second garment of somewhat similar shape, called the *park*, which completes the ordinary dress; but when prolonged exposure is apprehended a *gús* is worn instead of the *park*. But the latter articles have the hairy side turned outward, so that either of them worn in conjunction with the *málitza* forms a covering furred on both sides, and on that account capable of resisting extreme cold. Attached to the *gús* and *park* are close-fitting hoods, completely protecting the wearer's head and neck, and allowing only the temples, cheekbones, and chin to protrude through the orifice.

The *park* is made of *neplúis* sewn together, handsomely trimmed along the edges with the skin of the young long-haired dog; the hood is commonly ornamented with the head and ears of some small animal. The *gús*, or overall, is always formed of the skin of a long-haired old reindeer in its winter coat, and gives the wearer some resemblance to a polar bear reared on its hind legs. The absence of all colour enables the Ostiaks to follow their game over the surface of the snow without attracting attention.

These garments are singularly well adapted to the wants of the inhabitants in that rigorous clime, the weight

being evenly distributed over the surface of the body, and proving no impediment to free action. The Ostiaks wear a girdle buckled round the loins, over which the *málitza* laps a little, forming a fold which serves as a pocket, containing amongst other small necessities the snuff-box, of whose contents they are inordinately fond. No article of large dimensions can be admitted into this receptacle, for the only road to it lies through the transverse slit in the left glove. A knife with a broad blade protected by a leather sheath always hangs at the girdle.

I have been thus particular in describing the Ostiak dress, as, with slight modifications, it applies to the whole of the numerous races inhabiting Siberia. Amongst the Ostiaks both married and single women wear the veil, a head-dress shaped somewhat like a cross.

Some members of this race use fish-skin clothing in place of furs, the eels which abound throughout their country furnishing the material. These skins are very strong and quite air-tight, excluding an immense deal of cold when well rubbed with fat. They are also used as windows to the yurts.

The Ostiak yurts, or huts, are of a square form, with a flat roof, in which is an aperture for the smoke to escape. The floor is usually sunk considerably beneath the sur-

rounding ground; opposite to the low door whereby entrance is obtained is a raised hearth of clay in which an iron pot is fixed, the fire required to warm this utensil lying in an opening beneath it. The wooden walls of the dwelling are protected from the flames by a thick layer of clay, whilst a cylindrical flue of the same material rises perpendicularly to the roof. Round the rest of the room, adjoining the walls, the floor is raised for a width of about six feet, forming a kind of stage, whereon the inmates sleep at night, and work during the day. Laths for light, and fishing gear form the principal furniture of a yurt, together with a few stools on which such members of the family as are unemployed sit roasting themselves before the fire. If a stranger enters from the outer coldness one of these comfortable seats is immediately tendered to him.

Fishing and hunting form the principal occupation of this people. An ingenious method employed by them to capture the sturgeon is worth mentioning. During the depth of winter these fish congregate in muddy hollows in the beds of the rivers, lying in clusters for the sake of warmth, and remaining perfectly motionless. To secure his victim the Ostiak cuts a hole in the ice and sets a spring rod; but this would be sheer waste of time unless the sturgeon can be routed out of their shelter. To effect this the fisherman forms a number of balls from

clay, which he places in the fire until they are red hot, and then throws into the river through a hole in the ice cut *below* the point where dangles his tempting bait. The unexpected heat communicated to the water by the fire-balls arouses the sturgeon from their luxurious repose, when, rising to the ice they swim slowly up stream—the course they invariably take—and before long arrive at the alluring morsel displayed by the cunning Ostiak for their special behoof. Much ingenuity and an intimate acquaintance with the habits of the fish are shown in this method of capturing them. They also take large quantities of fish by means of basket traps woven from their pliable larch laths.

The chase of fur-bearing animals is commonly conducted by shooting them with bows and arrows, guns and powder being too scarce and expensive for the greater portion of the race. The woods abound with game—ermine and squirrels, foxes—which are in request the whole year round—wolverenes or gluttons, sables, reindeer, and elk all form objects of pursuit. The Ostiak bows are six feet in length—considerably taller than their owners—slightly curved when unstrung, and possessing a diameter of one inch and a quarter at the middle. They are made by joining a flexible slip of birch to a species of hard pine wood, the cement used being fish-glue, and so perfectly is the junction effected that no

trace of it remains after the bow has been covered with colouring matter. The arrows are four feet in length, made of hard wood and finely feathered towards the notch. The arrow-head consists of a ball, or of a rough iron lozenge; with the former sables and squirrels are killed without injury to their skins; to the latter the larger quadrupeds fall victims. These bows are exceedingly powerful, and the Ostiaks use them with great effect, taking care, however, always to wear a strong bent plate of horn upon the inside of the left fore-arm to deaden the blow of the string when released.

The religion of the Ostiaks is Shamanism, and an imperfect Christianity towards the south, where they are brought into frequent contact with the members of the Greek Church. Their inclinations undeniably tend towards the old form of worship practised by their forefathers, symbols closely approximating to idols being frequently found in the yurts of those professing Christianity, the correct meaning of which it is impossible to arrive at, as, when questioned, the inhabitants affirm that they are placed there for ornament. At Beresov the Ostiaks still regard with superstitious awe a large larch tree, in the trunk of which they place small propitiatory offerings, a fact not lost sight of by the Cossacks, who reap the benefit of their credulity. Some of the coins found in this tree are supposed to have been introduced

amongst the Ostiaks long before the Russian conquest, when Bokharian merchants penetrated direct to the country of the hyperborean tribes, obtaining from them the costly furs which can now be procured only through the Russians.

The northern Ostiaks annually celebrate great religious festivals on the Obi, uninterfered with by the Russians, who have nearly abandoned all hopes of converting this people to Christianity. In common with the Voguls and most of the Siberian races, the Ostiaks possess a priestly race, shrewd, clever men, who, under the name of Shamans, act as mediators between the people and their gods, claim for themselves the spirit of divination, and offer up sacrifices at certain seasons. These men are clever conjurors, professing invulnerability and proving it by apparently stabbing themselves in various parts of the body; but slight of hand has a large share in this jugglery, the Shaman taking remarkably good care never to inflict the smallest scratch on his sacred person. That they should deceive the unsophisticated Ostiaks can hardly be wondered at, for even the Russians attribute to them miraculous influences, referring their powers to the direct inspiration and assistance of the devil, which speaks volumes for the credulity of the Muscovites, or for the dexterity of the impostors. In Shamanism the hierarchy is hereditary, the father selecting the most capable

of his sons, whom he instructs in the art of making sacrifices and other priestly accomplishments, and eventually transmitting to the favoured individual the dignity of his office. If childless the Shaman adopts an heir.

At the great fair at Obdorsk and elsewhere the Ostiaks purchase large numbers of old cavalry sword blades, such weapons being in great request at their religious festivals. The Shamans bedeck their fur robes with the bones and teeth of sea-animals, the metal images of birds or beasts—with any material, in short, that will assist in imparting to them a terrific appearance. The ceremony of divination is performed by their circling round and round a fire, shrieking aloud, beating drums, tom-toms, or any instrument that will add to the clatter, twirling their arms and writhing their bodies in such a fashion that the beholder might easily be excused for deeming them possessed. After this part of the performance has lasted a considerable time, the Shaman falls foaming on the ground, whereupon his congregation place a cord round his neck, and hide him from profane view beneath a heap of skins—for the medium is now in communication with the spirits. When the bystanders judge that the interview has been of sufficient duration, two of their number seize the ends of the cord encircling the magician's throat and pull at it with all their strength, the Shaman—still under the skins—slipping his hands beneath the noose

and shielding his neck to the best of his power. After a time he makes a sign that the spirits have left him, whereupon the cord is relaxed and he communicates to his audience the required predictions. Sometimes the Shamans are too slow in placing their hands as a guard against the noose, in which case it is likely to go hard with them. Early in the present century the provincial tribunals investigated the case of a sorcerer who met his death in this manner.

A Russian gentleman obtained permission to be present at certain ceremonies performed by the Ostiaks near Obdorsk, in honour of their god Yelan, which he thus describes :—"The ceremonies began about eight o'clock in the evening, and lasted till two in the morning. At first children ran round to each yurt, to call the Ostyaks to the divine rites. In so doing, they screamed in all manner of wild notes, and seemed as if quite beside themselves ; this went on while the people were assembling in the yurt selected for the proceedings. On reaching this, each of the Ostyaks turned round three times before the idols, and then took his place on the right side of the room, in the recesses, or on the floor. They talked to one another, or otherwise employed themselves as they pleased. The recesses on the left side were concealed by a curtain, behind which went certain persons, who on entering the yurt turned round,

like the rest, three times in front of the idols. At length, when all were assembled, the Shaman began rattling with the sabres and iron-headed lances, which had been previously heaped together before the images. He then gave each person present (excepting the women, who were also behind a curtain) a sword or a lance, while he took himself a sword in each hand, and placed himself with his back to the idols. The Ostyaks stood in rows lengthwise in the yurt, or packed in the recesses. They then all turned round three times, holding their swords stretched out before them. The Shaman struck his two swords together, and so they all began to scream out *Heigh!* in different tones as led by him, at the same time bending their bodies from side to side. This cry was sometimes repeated at wide intervals, sometimes in rapid succession; and with every repetition of the *heigh*, came the bowing movements, to the right and left: the swords and lances, in the meantime, were sometimes sunk to the ground, sometimes stretched upwards. This screaming and swinging about lasted for an hour, by which time the men became excited to such a degree, that I could not look without terror even in those faces which had at first appeared to me to be engaging."

"After they had screamed their fill, they became silent all at once, and ceased too from their oscillations; then turning round before the images, as at the commence-

ment, they gave back the swords and lances to the Shaman, who restored them to their original position. The Ostyaks having settled themselves, some in the recesses, others on the floor, the curtain rose which had concealed the women, and now both sexes joined in dancing to the music of the *dombra*. The dance was by turns wild and comic, and continued a long time. Next came forward some buffoons and posture-makers, in various droll attire, and repeated the chief movements of the dance. At length the Shaman distributed again the swords and lances ; the Ostyaks again reeled from side to side and cried *Heigh !* then turning round three times at the conclusion, and striking three times on the ground with the swords and lances, they gave the arms back to the Shaman, and went off to their homes."

From an ethnographical point of view this description is highly interesting, a sword dance somewhat similar still existing amongst the Hungarians or Magyars, who spring from exactly the same stock as the Ostiaks and Voguls.

The four principal deities amongst the Ostiaks are *Ortik*, *Yelan*, *Long*, and *Meik*, the first-mentioned still found in Hungary as *Ordög*, the name there given to the devil. All their idols consist of a rude bust without legs, and *Ortik* is usually represented by a metal plate nailed on wood to fulfil the office of a face and features ; while a stuffed sack, from whence dangle two arms, com-

poses the body. This uncouth figure is dressed in a linen frock, and a sword and spear are placed beside the bracket on which it stands.

Yelan, in whose honour was performed the sword dance described above, resembles Ortik in every particular, except that his head is more peak-shaped, which serves to distinguish his images. The body of this deity is frequently made of bare wood.

Long may be considered as the presiding genius of the Ostiak arts and sciences, and in addressing him his followers make use of an epithet which the Russians think can be best expressed by the word *mastuir*, *i.e.*, master. Medicine is under his supervision, and persons wishing to be healed make him offerings which consist solely of productions of art, furs and similar natural substances being rigidly excluded. Thus the sack which forms the body of this idol is stuffed with cloth and such textile fabrics as his votaries are able to procure by barter or other means.

If an Ostiak loses his way in the forest, or is overtaken by a snow-storm, he at once invokes Meik, promising this deity renewed attention and offerings if he will aid him in his trouble. The image of this idol is rude in the extreme, being simply a block of wood, covered with a beaver skin park, such as has been described above.

The Ostiaks maintain the principle of an everlasting

God, whose likeness they affirm cannot be produced in wood or stone, and the idols just mentioned are evidently regarded as mediators through whom the Great Being is approached. As a type of this deity they venerate the black bear, the most powerful animal known to them. This beast they will kill and eat, but when dead they manifest their respect for the carcase in various ways; thus, a woman is not allowed to taste the black bear's head.

By judging the position of the Great Bear, a constellation known to him as *Los* or the Elk, an Ostiak can tell the time very accurately at night, although the operation involves a calculation of some magnitude, and one that our English peasantry would find exceedingly difficult to follow, varying as it does with each change of season. Indeed as a race they are by no means deficient in ingenuity, rendering useful every article that their sterile country produces. I have mentioned how cleverly they fashion warm garments out of eel-skins; they utilise the larch in a somewhat similar way, forming a soft wisp of shavings from this wood, which answers the purpose of a napkin to perfection. The women carry these wisps in their girdles, and if more are required the men fashion them in a moment with their knives. On the stem of the birch-tree is frequently found a brown fungoid excrescence (*Polyporus igniarius*) of considerable size, which, after

drying it well before the fire, the natives pound to powder and use as snuff when mixed with a certain quantity of real tobacco. When about to make use of this ingredient they pour a small quantity from the horn containing it upon the right thumb, following the fashion of the Chinese, from whom they are supposed to have learnt the habit of snuffing.

Music of a rude kind, and even poetry are known to this wild race, whose improvised songs are described as very striking, owing to the pantomimic skill with which they portray every incident in the narrative. Each singer pitches upon some well-known occurrence and treats it according to the promptings of his own individual taste. Frequently the same subject is handled for years in succession, more particularly if the incident is of a highly dramatic character. A bear having dug up and devoured a dead Ostiak child, the people for a long time afterwards found in this shocking occurrence a theme for their improvised minstrelsy, imitating with the utmost fidelity the motions of the animal, and reproducing its angry growls as the unhappy parents endeavoured to frighten it from the body.

To accompany their voices they make use of two stringed instruments, whose origin is lost in antiquity. One of these, the *dombra*, is shaped somewhat like a boat and has five strings; the other, which is larger than the

dombra, is furnished with eight strings. Ermann tells us that this instrument "bears the name of *naruista yukh Khotuing*,—an expression which the Russians interpret, not improperly, by the word *lebed*, 'a swan,' for such, in fact, is the meaning of the last term of the Ostyak denomination. It is obvious that in this instance the Ostyaks have had in view the well-known story of the singing of the swan, which is by no means without foundation, for the notes occasionally uttered by the *Cygnus Olor*, when in a state of freedom, and particularly during the spring, are, in fact, most beautifully clear and loud, and that this bird, when wounded, pours forth its last breath in such notes, is now known for certain."

The Ostiak songs are monotonous, consisting only of the fundamental note and minor third, and, more rarely, the fifth also.

In concluding this brief account of a gentle and hospitable race I may mention that Ostiak honesty is proverbial throughout Siberia ; no trader entering their yurts need fear that his goods will be stolen, or he himself in any way molested, however pressing the needs of the family with whom he takes up his temporary abode. An engagement entered into by these people, if ratified by their peculiar custom of swearing upon the head of a bear, is binding even after the death of the contracting party, for his family fulfil any portion of the obligation that may

be left undone. In a court of justice, when swearing on the head of a bear, the Ostiaks imitate the motion of eating, implying thereby a hope that the animal may devour them in like manner if they swerve from recounting the whole truth. They are a kindly simple race despite their paganism, but brandy and disease, introduced amongst them by their Russian masters, has wrought great havoc in their ranks, and their numbers are slowly diminishing. According to the latest accounts the race now consists of less than one hundred thousand souls.

The Kirghiz.

This people belong to the nomadic Turkish race spread over a great portion of Central Asia, and may be described as leading a pastoral erratic life, to which they add the occupation of the freebooter when an opportunity presents itself. In stature they are beneath the middle height, a man of five feet six being rare amongst them. Their countenance is disagreeable, the nose sinking into the face, leaving the space between the elongated eyes without the usual dividing ridge; the brow is protuberant, the cheeks, large and bloated, rendering their aspect very repulsive. Exposure to all weathers, rather than the action of the sun, darkens their complexion, for the women, whose occupations keep them under cover, are healthy-looking and ruddy.

The dress of the men consists of one or more sheepskin frocks or *pelisses*, wide trousers, bullock-hide boots and girdle, and a conical felt hat in summer, or a furred cap in winter. That of the women is nearly the same. The wealthier classes amongst this people frequently wear silk, often finely embroidered.

Their dwellings are of two kinds—tents or wigwams, formed of poles, spread at the foot and gathered together at the top, covered in winter with felt made of the hair of the deer, and buried several feet in the snow, but thatched simply with dry grass in the summer, as a protection from the sun. Caverns, shaped very much like rabbit-burrows, and reached by an inclined plane descending from the level ground, are also favourite habitations amongst the Kirghiz. Both descriptions of dwelling are filthy beyond measure.

Mutton, horse-flesh, tea and sour mare's milk form their principal articles of diet, although they greedily drink spirits if that commodity is obtainable. Their chief occupation is tending sheep, goats, horses, and camels, of which they possess immense herds.

This race is greatly given to kidnapping children, for trade in human beings has ever formed a favourite pursuit with the inhabitants of the steppes. Sometimes, on the death of the father, the eldest son gets rid in this way of his sisters, whom he would otherwise have to support ;

but, in general, kidnapping is the work of families at variance with each other, and bitter blood feuds are engendered by this detestable practice. Regardless of the feelings of their own kith and kin, the Kirghiz naturally show little mercy to such prisoners as fall into their hands. They possess the knack of knocking a captive on the head with such dexterity as to blunt his intellect and render escape improbable. The Kirghiz confessed to a traveller the following cruel practice, usual in their tribe: "When they have caught a Russian, and wish to retain him in servitude, they cut a deep flesh wound in the sole of his foot, towards the heel, and insert some horse-hair in it. There is then no doubt that, even when the wound is externally healed, he will abide for the rest of his life by a leading rule of Kirghis national manners; for, as the Kirghis is always on horse-back from choice, so the maimed Russian becomes a confirmed equestrian from the pain of walking."

The religion of these people is a corrupt form of Mohammedanism, and the various hordes together number over one million souls.

The Buriates.

By this name is known a Mongolian race scattered about Siberia in the vicinity of Lake Baikal. They resemble the Chinese in personal appearance, having, like

that race, projecting cheek bones, oblique and elongated eyes, jet black hair, and teeth of perfect whiteness. The men let their hair grow long on the crown of the head, plaiting it into a queue that hangs down the back; the covering of the rest of the scalp is removed, cut short, not shaved, the use of the razor being limited to the priesthood. The women of the wealthier Buriates dress their hair with great taste and skill, forming it into two thick braids, which fall from the temples below the shoulders; whilst round the forehead is bound a fillet studded with beads of mother-of-pearl or Uralian malachite, and enriched with round bosses of polished coral. The young maidens embellish their braids with strings of the same costly material, and the natural beauty of their faces is well worthy of such ornamentation, for their features are pleasing, if not exactly corresponding to our European ideas of loveliness; their eyes dark, sparkling, lively, and impressive, and their cheeks tinged with a ruddy hue which is plainly evident through the darkness of their skin. A close-fitting dress displays the symmetrical form of these Asiatic beauties, whose figures are delicate and graceful, although most of them are above the medium height.

The Buriates, although perfectly civilised, still retain a sneaking affection for the wild life of freedom that they led in the days of old, and for which they battled so

bravely against the invading Russians throughout the seventeenth century. Many of them inhabit houses, but the great majority continue to dwell in yurts formed by a light frame of trellis-work covered with thick felt, and having an aperture in the centre for the escape of smoke. Although these huts are from fifteen to eighteen feet in diameter, they are nowhere sufficiently high to permit of a full-grown man standing upright. The entrance to a yurt is closed by a curtain of quilted felt, which excludes the air, but at the same time gives full play to the smoke from the cowdung fire which occupies the centre of the floor, and produces a stifling atmosphere, highly trying to a European. The houses of the wealthier class exhibit a curious association of civilisation and rudeness, the fireplace consisting solely of a hole dug in the ground in the centre of the apartment, with felt mats and cushions for sleeping on ranged around it, whilst against the wall is placed some article of modern Russian furniture, either wholly unused or fulfilling some purpose foreign to the ideas of its original constructor. Their household utensils are limited to a few pots for boiling meat or milk, some rude jugs and basins, together with jars for containing water. Yet notwithstanding this paucity of domestic appliances, the Buriates are skilful craftsmen in metals. Their implements for kindling a fire, made of plates of well-tempered steel stitched to a

velvet bag for holding tinder, the latter ornamented with spangles and beads of their own manufacture, are preferred by the Russians to those imported from Europe; and the iron-work of their riding furniture is beautifully engraved and tastefully inlaid with plates of copper and silver. Some members of this race excel in the manufacture of pipes, forming these articles entirely of silver, both the small bowl and the stem being adorned with reliefs and inlaid with pink coral.

The Buriates are divided into three religious sects—the Christian, the followers of Buddha, and the adherents to the old superstitions of Shamanism. The Buddhists by far outnumber the other denominations, and Christianity can only boast of a few thousand lukewarm converts, notwithstanding the utmost efforts of energetic missionaries.

The exact period at which Buddhism became established amongst the Mongolian tribes of Central Asia has not been satisfactorily ascertained, although it may be approximately referred to the middle of the seventh century. Its influence is still extending, but the doctrines it presents differ materially from those promulgated by the founder Gautama, being, in many points, actually antagonistic to his primitive teaching.*

The *Dalai Lama*, the head of the Buddhist religion,

* "Buddhism." By T. W. Rhys Davids, pp. 199—246.

dwells at the capital of Thibet, and though his followers acknowledge him to be mortal, they believe his soul to be an immediate emanation from the essence of their supreme deity, Buddha, and to enjoy immortality. Wherever this worship prevails are found religious communities gathered round the temples dedicated to the rites of their faith, and monastic establishments, or lamaseries, containing the priests of the several orders known among them. Over every lamasery presides a chief, who is believed to enjoy the same immortality as the grand heads of their religion at Llassa, and the chief of the lamasery at the holy village of Souggara is the head of all the Siberian Buddhists, and is called by the Buriates the *Khomba* or *Grand Lama*.

When the Khomba dies it is held that his spirit immediately enters into the body of another human being, who thus becomes successor to all the rights and privileges held by his predecessor, and some little difficulty often occurs in ascertaining who may be the favoured individual, for the soul of the Khomba is bound by no laws, and enters at will into the body of any being. Commonly it is recognised as having animated some new-born infant, who is at once taken to the religious establishment and educated by the Lamas in the mysteries of their faith, spending his youth in

* "Travels in Siberia." By S. S. HILL. Vol. II. p. 100

studying the worship of which he is now the living head and type in his locality.

The Lamas are treated with the greatest reverence, and every Buddhist Buriate shows a laudable anxiety that one at least of his family should embrace the priestly calling. They observe the strictest celibacy, and rise through various gradations to a state of purified regeneration which leaves them in a state free from all desire. Timkowski gives the following translation from one of the Buddhist holy books, which I extract as exemplifying the consideration in which the priesthood of that religion are held:—"You will attain the highest wisdom if you honour the Lama; the sun itself, which dispels impenetrable mists, rises *only* that honour may be rendered to the Lamas; the most enormous sins obtain pardon by showing respect to the learned Lamas. By glorifying the Grand Lama, you incline the Bourkhans and the Bodisadon (divine emanations) to diffuse blessings and avert evils. The benediction of the Grand Lama gives bodily strength, communicates great advantages to youth, and confers glory. If you sincerely implore, during a whole day, the benediction of a Lama, all the sins committed during innumerable generations are effaced; a man then becomes a Bourkhan. On the contrary, if we render ourselves unworthy of such a favour, we become the prey of hell. Any offence to a Lama annihilates the merit acquired

by a thousand generations. Whosoever shows any contempt for the holiness of the Lamas is punished by accidents, sickness, and all kinds of misfortune. If any one turns into ridicule the precepts of the Lama he is punished by impediment in his speech, giddiness, and death. Ridiculing the soul of the Lama leads to possession by the devil, loss of reason and memory, and banishment into the place of eternal torment. This derision is the greatest of all sins. He who is guilty of it will never have rest; neither his body, nor his tongue, nor his soul will enjoy the least tranquillity. He who succeeds in correcting himself of this vice may hope to escape the fate which awaits him. If he succeeds in overcoming this evil propensity, by acknowledging it to be the most hurtful of all evils, he is certain of subduing his enemies. It is for this reason that the holy books order us to pray, and to honour the Dalai Lama with indefatigable perseverance.”*

Mr. Hill, in his interesting book before quoted, gives a full account of an interview that he obtained with the Khomba Lama at Souggira. Although little over thirty years of age, the Buddhist chief was of enormous bulk, and his features deformed by fatness; notwithstanding this blemish his expression was benevolent, and even agreeable. This potentate's astonishment was extreme

* “Recollections of Siberia.” By Charles H. Cottrell.

when he learned that the British were ruled by a woman courageous enough to make war against even the Chinese. The whole conversation is extremely interesting, but space forbids my inserting it at length. Mr. Hill's impressions from this interview I, however, record in his own words: "Some short communications (from the Buddhist chief) that came to me after this, left an impression on my mind that it was the opinion of the *Khomba Lama* that all religions were good, when the men themselves were virtuous. From this I was led to believe that he considered them all to be but mere engines of government, or that there were two or more creators and superintendents of divided portions of the universe, who were independent in their actions, and had severally formed different races of men, from whom they exacted their particular dues in especial forms of worship which they had arranged to suit their particular tastes."

The Buddhist priests or Lamas are divided into four classes or sections. Doctrinal affairs, with the abstruse tenets and mysteries of their faith, occupy the first class. The second busy themselves with all that concerns the rites and ceremonies of their religion. The study and direction of their worship employ the third; but the occupation of the fourth is eminently useful, and if enforced from a political motive exhibits great wisdom, for this class devote themselves entirely to the study and

practice of medicine, tending and healing the sick in a country where physicians are unknown, and by this means carrying their kindly influence far and wide over the land. The hold that the priests thus gain over the simple Buriates, together with the mildness of the doctrines that they inculcate, serves to explain the small advance that Christianity has made amongst that nation. The Lamas are not above practising various other branches of industry; thus they manufacture their own wearing apparel, together with the furniture and other articles required for use in their establishments. Their habits of life are very simple, owing to the strictness of the rules they are enjoined to obey. I have mentioned that celibacy is enforced, and the use of both spirits and tobacco is rigidly forbidden; the latter because—say the Buddhists—“it is conducive to indolence, and tends to waste the hours which we are able to spare from the serious occupations of life, which ought by every rational being to be devoted to some amusement or pursuit which affords as well instruction as amusement.” Alcohol is denied, “lest excess should disorder the brain of the student of the divine oracles, and corrupt the heart by the bad passions which it might engender.”

The reader who has followed me thus far will admit that the mild sway of the Buddhist priestly-physicians is a stride considerably beyond the barbarous superstitions

of the crafty Shamans, who still terrify a large portion of the Buriate race. These worthless vagabonds are pretty much alike all over Siberia, their dress and degree of imposture varying only with the amount of credulity existing amongst the unfortunate tribes over whom they dominate. In cases of illness their incantations and sacrifices are resorted to, for the purpose of exorcising the evil spirit, when the most absurd ceremonies are performed, in which the consumption of intoxicating liquors forms a considerable part. After howling and repeating unintelligible jargon beside the sick man these worthies take their departure. If the patient's condition improves, the credit belongs to them; if he dies—why, the evil spirit was dissatisfied with the sacrifice offered to it. No blame rests on their shoulders, and they carry their mummeries merrily to the next afflicted yurt. The dress of a Shaman amongst the Buriates consists of a reindeer jerkin with short sleeves, around the bottom and along the seams of which are sewn strips of leather reaching to the ground. This garment is covered with iron plates and pieces of brass, which produce a hideous jingling as the sorcerer capers about in the exercise of his function. A leathern apron conceals the forepart of his body from the head to the knees, and he wears a fur cap, which, however, he lays aside on commencing his incantations. A small drum and stick complete his equipment. When

a robbery has taken place and a Shaman is employed to discover the guilty person, he places his drum on the ground before the burning embers of a fire, and the accused individual is placed near these garments, feet first, in which position he invokes most dreadful curses upon his own head if he is guilty. The sorcerer, who looks on, eyeing him closely, now advances and throws a lump of butter upon the embers, whereupon the accused steps over the drum and dress, swallows some of the smoke blown up by the butter, and looking up at the sun, expresses his hope that the great luminary will deprive him of his sight and heat if he has sworn falsely. After this he is required to bite the head of a bear, a liberty which the animal will suffer patiently if the accused is innocent; but if foresworn, Bruin will return the compliment with compound interest. The Buriates, even when conscious of their rectitude, are much averse to this ceremony, not entertaining the Shaman's high ideas respecting a bear's power of always discriminating aright between guilt and innocence. These sorcerers are sorry rascals, and suck the very life-blood from the people by their impudent impostures.

Agriculture forms the principal occupation of the Buriates, though many of them subsist by the chase of fur-bearing animals. They are scattered over the south part of the province of Irkutsk from the Chinese

boundary northward towards the region of the Upper Lena ; and westward from the Onon to the Oka, a tributary of the Angara. This interesting people number some two hundred and twenty thousand souls.

The Tungooses.

The Tungooses, Tungús, or Tungusians, are a branch of the great Turanian stock, and wander over the immense mountainous regions which extend from Lake Baikal to the Sea of Okhotsk. Further north they are found on the Lena, the Indijirka, the Kolyma, and the Tungoose rivers, but their proper and original country is Dauria, to the northward of Corea and China. Such tribes of this race as dwell within the limits of the Chinese dominions bear the name of Manchus, and are often improperly called Manchu Tartars, by which appellation they are doubtless familiar to the reader. The Tungooses in Siberia are known by the Russians as the Dog-, Horse-, or Reindeer-Tungooses, according to their different habits.

They are usually of medium stature and have good, though slender, figures. Their eyes—elongated, slightly oblique, and set far apart—betray at once their Mongolian origin, but their noses are well formed, though small, and their faces are less flat than those of the Mongols ; altogether their appearance is described as

pleasing, but one traveller* who certainly never stuck at trifles, says, "with these fair traits of character they are filthy to an extreme, eating and drinking anything, however loathsome, and the effluvia of their persons is putridity itself."

The dress of the Tungooses much resemble that described as worn by the Ostiaks, but the park is made without a hood. They generally keep the head uncovered, but have always a *maluchi*, a detached fur hood, slung around the neck ready for use. These articles are manufactured from the legs of the red, black, or silver-grey fox, the different coloured skins being sewn together in alternate stripes, and bordered with sable, beaver, or sea-otter, the whole forming a very handsome ornament and protection for the head. These people cut the hair short with the exception of a long lock on either side, of which the young men are very proud.

Their habitations consist of a few poles stuck in the ground, or snow, and fastened together at the top in the form of a cone. This framework is covered with reindeer skins in which a small gap is left to obtain an entrance. The fire blazes or smoulders in the centre of the yurt and the smoke finds an exit as best it can. Bear and reindeer skins form their beds, with a blanket

* "Narrative of a Pedestrian Journey through Russia and Siberian Tartary," &c. By Captain John D. Cochrane, R.N.

made from the same animal in the shape of a sack, into which the sleeper thrusts his lower extremities. As the art of tanning is unknown amongst them, these articles, when not in use, are buried beneath the snow, by which means the hair is prevented from falling off. Some of the wealthier Tungoses have trellis-work yurts, with a door opening and shutting properly, but no chimney exists even in these dwellings, and the atmosphere is almost unbearable to an European.

The Tungoses are essentially a nomadic race, carrying their love of change to such an extent that they rarely encamp for two nights on the same spot. From the nature of their dwellings a very short time suffices to strike and pack them up upon the backs of their reindeer, and a shift of quarters is effected with marvellous ease and rapidity.

Two qualities characterise this race—their honesty and their wilful improvidence. Robbery is regarded by them as an unpardonable sin, and one of their number convicted of this crime is branded by its stigma through life. In remarking on their utter lack of thought for the morrow, I must state that, although the Tungoses have large herds of reindeer, they betray the greatest aversion to kill these animals for food, subsisting almost entirely on the bodies of the game that they take for the sake of their furs. Unless a family is very rich, its members

never think of slaughtering a reindeer until they have been eight days without food. Should Providence bring any game in their way they gorge themselves to repletion and continue their feast until nothing but the bones remain. Mr. Cottrell gives the following graphic account of their mode of life :—

“When their provisions are consumed, the man goes to the *chasse*, pointing with his finger towards the direction he means to take, and making other dumb signs by which his wife may know the spot where she will find him. As soon as he has set off, she takes up the *parade*, puts all their property on the reindeers' backs, and proceeds to the place which her husband pointed out, which she never fails to discover. The tent is then pitched, and everything prepared for the return of the husband. If he has been lucky, he brings home a piece of flesh for supper, and the dumb motions are again employed, to show his wife where the remainder is deposited, which it is her business to fetch next day. As long as the provisions last, he never does anything but eat, smoke, and sleep; should he kill nothing, he comes home without saying a word, sits down by the fire, lights his pipe, and then tightening his girdle, goes to sleep. The wife and family do the same, and all go supperless to bed: fastening the belt tight round the stomach is supposed to prevent them feeling hunger. A Tonguse gives the first

animal he kills in the day, be it however valuable, to the first person he meets, because he attributes his success to this person's luck."

The family mentioned above must have been more morose than is usual amongst this race, otherwise the account of their mode of life harmonises in every respect with the reports of other travellers. Every one who has dwelt amongst them seems to have been astonished at the length of time for which they can abstain from food, and the enormous quantity that they can devour when the opportunity presents itself. I quote from Mr. Bush concerning these facts, and may remark that what follows is mere child's play to the feats of gluttony mentioned by other authorities :—

"I had often heard large stories concerning the eating powers of these northern natives, but had, up to this time, been disposed to doubt many of them. This night, however, we witnessed one of their moderate meals, which caused all my former scepticism to vanish."

"Upon starting in the morning, some article had been left behind at the Tungusian encampment, and we sent one of our men back to get it. He did not again overtake us until we had been in camp two hours. After pitching the tent and arranging the camp, Telefont and Alexai, the two remaining Tungusians, sat down to a

gallon-kettle of hot tea, and did not leave it until they had emptied it of the last drop. They then cooked a four-quart pailful of boiled fish and soup, the contents of which they also devoured. By this time Zakhar, the other Tungusian, came up, cold and hungry. The same pail was then cooked *twice full* of boiled beef which the three emptied both times, even cracking the bones for the marrow. Then, after rinsing the pail, they cooked it full of 'crupa,' a kind of mash, which they ate as soon as it was prepared. After all of this, either their appetites were not fully appeased, or else they feared to break off too abruptly, for they commenced eating dried ukale, even devouring the fish-skins, which they first broiled in the flames of the fire. All this occurred in our presence. Our tent not being large enough to accommodate the whole party, it became necessary for the guides to camp outside. They had no sooner got their camp-fire started than they commenced the preparation of other food, but I no longer attempted to keep an account of it. The last thing I heard after retiring was the cracking of beef-bones for the marrow."

"The improvidence of these natives is equally as astonishing as their ravenousness. They will consume nearly a week's provision in one night, and go hungry the remaining six days."

I have mentioned that the Tungoses subsist chiefly on

the game that they kill, and being thus dependent on the wild animals of the forest, it is not unnatural that they have acquired great dexterity in their capture. Such animals as the bear, the wolf, the blue, red, and white foxes, squirrels, sables, beavers, &c., are usually trapped, in order to injure the fur as little as possible, and as each of them must be decoyed by different means, a thorough knowledge of their tracks and habits is necessary to form a successful hunter. Both the bow and arrow and the rifle are employed by the Tungooses, and the following account of the method adopted by that race for the destruction of game applies equally to all the northern Siberian tribes.

Shooting in our fashion, that is to say, giving the game some chance of its life by putting it in motion before firing, would be regarded as foolish in the extreme by a native of Siberia, who never pulls trigger, or releases bowstring, until he is quite sure that his missile will take deadly effect. Thus, sport, in the sense employed by European nations, is a word unknown to the Tungooses and kindred tribes, although they all possess an inherent love of the chase. The skill displayed by a man who knocks over his game on the wing is not appreciated by the natives, who regard such a proceeding as involving a prodigious expenditure of valuable ammunition for a very inadequate end. The Tungoose hunter carries a

cumbrous rifle that throws a bullet no larger than a swandrop by means of a very slight sprinkling of powder. Armed with this weapon he approaches his object by crawling on all fours, and latterly by worming his way along the ground, or snow, on his stomach. When arrived within what he considers safe shooting distance, he halts, and fixes in the ground two forked sticks, on which he rests his weapon and, after taking long and steady aim, fires, his diminutive bullet rarely, if ever, missing its mark.

The native who wishes to gain a large supply of provisions or other necessities, goes into the woods at the commencement of winter, accompanied only by his dog. His *impedimenta* are few, consisting only of a stock of flour, a pot to boil meat in, and his gun. Donning a pair of snow-shoes, made from a strip of birchwood, lined underneath with skin, having the hair still attached to prevent slipping, he wends his way through the interminable forest until his dog winds an animal and forces it to take refuge in a tree, at the foot of which it remains barking until the hunter comes up, and, having set up his resting forks, leisurely shoots the game. An old hand can tell in a moment, by feeling the track of an animal in the snow, whether it has passed recently or whether the footprints are of old date. The occupation of hunting for a livelihood is known as the *promysk*.

whilst shooting for amusement is called the *okhóta*. In approaching wild reindeer the hunter frequently masks himself behind a trained animal of the same species, under cover of which he crawls up to the wary herd.

But trapping is *par excellence* the science in which the natives of Siberia surpass all other nations, even the *coq de bruyère* falling a victim to their well-contrived snares. By the month of October the ground is covered with snow, and at that season the fur of the fox and squirrel is in its greatest beauty, the black points on the stealthy sable are more accurately defined, and the shaggy hide of Bruin wears its thickest mantle. Then those following the *promysle* of trapping form into parties, and start off into the forests, each man harnessing himself to a light sledge, which contains his provisions and scanty baggage. Sometimes, when the hunting ground is not more than a couple of hundred miles from headquarters, their wives and families accompany them, but as a rule the husbands are alone. Arrived at a likely spot, their first care is to build a yurt, after which they disperse to set their traps or dig pitfalls in the frozen earth. These are visited daily, and on them the natives depend for their supply of animal food. Late in December the party breaks up, the industrious, after disposing of their peltry at the fairs, returning home; the improvident bartering their spoil for bad brandy, and not honouring

the domestic fire with their presence until every object has gone down their throats. This description may be understood as applying more or less to every tribe in Siberia, and even to some of the Russian settlers who follow the *promysl*.

A few words on the Siberian rifle; the bows and arrows need no particular mention. The barrels of these clumsy weapons are mostly manufactured at Tobolsk, and their grooves are round instead of perpendicular. Into the muzzle a slight charge of powder is packed, on the top of which a small chunk of lead—cut with a knife, not cast—is forced with the ramrod, the grooves forming the missile into some sort of rude fit as it is jammed home. Uncouth and awkward as is the barrel, the lock is more so, the works of this piece of mechanism being *outside* the weapon! What happens if a spring should break? the reader will probably ask. Gunsmiths are rare in Siberia, what will the hunter do if this calamity befall him? Let no anxiety be felt on this score. If the frost, or hard usage, snaps a spring, there are larch trees in plenty all round, and from any one of these the Siberian can cut a bough to supply his want, without having recourse to a skilled artificer; so in this respect the awkward lock is admirably adapted to the requirements of the natives, and, moreover, the miss-fires are very few and the weapons carry with great accuracy.

The Tungoses possess large herds of reindeer, which they use both as draught animals and for riding purposes. To mount a reindeer is by no means the easy feat that it may at first sight appear, for although the beast stands only four feet from the ground, the saddle is awkward, and the slightest mistake in getting into it is likely to cripple the antlered steed for life. Ermann explains his experiences with these animals very minutely, and I cannot bring the matter better before my readers than by extracting from his book : "When the bridling is finished the reindeer are saddled, those destined to bear loads, as well as those intended for riding ; and the saddle is always placed forward on the shoulder, close to the neck. The pack-saddle is formed of two cylindrical cushions, eighteen inches long, of smooth leather, which are joined together, parallel to each other, and about nine inches apart, by two convex wooden yokes. When this saddle is placed on the reindeer, the cushions alone touch him, and his high withers lie between the yokes, but at a somewhat lower level. When, therefore, as in the case of my baggage, there are boxes two or three feet long, and one and a-half or two feet high, to be carried, a straw mat is first placed on each side of the animal to prevent its being galled ; these mats are tied together by short thongs which rest on the pack-saddle. Each box or package is tied round with a cord, which is made into a loop at the

upper side ; a stick is then run through the loop of the two packages that go together, and is set with the whole load across the saddle. The mode of proceeding is dead, is the same here as in the case of pack-horses ; a man on each side raises one of the packages until the loop meets, when the stick is run through them, and the load is then at once rested on the saddle. The Tunguzes themselves carry a great part of their property in small cylindrical bags of smooth leather ; when these are employed, the ornaments of the pack-saddle are more particularly conspicuous between them. The front of the wooden yoke is always adorned with carving, and usually, also, with metal plates. The ends of the white leather cushions are fringed with beads, or bordered with variegated leather-work. Similar ornaments are to be seen on the bridle."

"The riding furniture of the Tunguzes is far more simple, for it consists of nothing but a flat cushion, stuffed about two inches thick, which is placed, like the pack-saddle, forward on the reindeer's shoulders. In front, where the rider sits, it is considerably wider than the animal's back, and projects beyond it, therefore, on both sides. Behind, on the contrary, it is very narrow, and bends upwards a little. This saddle is fastened by only a single girth, which is not placed over the middle of the saddle, as with us, but on the back part of it, and is fastened underneath, just behind the reindeer's fore legs. They then

gave me a staff, about five feet long, and bid me mount, by means of it, a full-grown male reindeer, the back of which was not less than four feet high, as, indeed, is ordinarily the case with a Tunguzian deer. I tried at first to mount by what appeared to be the simplest way, that is, by swinging myself up as we get upon a horse without stirrups ; but the Tunguzes were immediately in a fright, and cried out dolefully, ‘You are breaking our reindeer’s back.’ And this apprehension was well founded, for as soon as the animal’s spine is touched, but a few inches behind the saddle, it bends its knees, and sinks as if under an insupportable load ; but it is impossible to mount by leaning on the deer’s shoulder, which is alone capable of bearing a weight, because the lateral jerk, which is unavoidable, is sure to displace the saddle.”

“There is no mode, therefore, of mounting the reindeer, but that which the Tunguzes have adopted ; and however inconvenient this seemed to us at first, the practice of a few days made us sufficiently expert. The rider, holding the bridle, stands at the right side of the animal, and not on the left, as with us, his face turned forwards ; he then raises his left foot to the saddle, which he never touches with his hands, and springing with the right leg, and aided also by the pole, which he holds in his right hand, he mounts into his seat. The women and girls are as expert in this jumping as the men, and I recollect to

have seen but once a Tunguzian woman receive assistance as she mounted."

The Tungooses cannot be said to possess much acquaintance with the arts and sciences, but they are very skilful with both axe and knife. Reckless of their own fully for all purposes of clothing, they have never felt the want of textile fabrics, the want of which would serve less completely than the material with which Providence has supplied them to keep out the winter cold of their northern home. In sewing skins together the women make use of short reind or sinew, which they split into threads of the desired thickness, and then moistened in the mouth until they become pliable, and after being passed through holes bored in the pieces to be fastened, are tied together. Before making up these threads the matrons roll them upon their right knee with the palm of the hand, so when a woman is perceived to have her drawers whitened at that part, and covered with glue, it is a sure voucher for her industry. Linnæus describes them as a gay, light hearted people, very fond of a joke, and with a quick sense of humour. They play at cards, using packs procured from Russian pedlars, and betraying an intense interest in the game, although never staking anything on its result. Some of them are also very fond of chess, a game with which they probably became acquainted through the Chinese, in ages long

gone by. Both men and women carry pipes, and are passionately fond of tobacco.

The religion of the Tungooses is an imperfect Christianity in some parts, but in speaking of the race as a whole it may be termed Shamanistic Paganism. The customs of their priestly conjurers so closely resemble those of the Buriates, that they need no separate description.

On the Amur is found an off-shoot from the Tungoosian race, a tribe numbering some 8,000 souls, and known as the Gilaks. They are entirely nomades, who live by fishing and hunting, the Amoor and its tributaries literally teeming with salmon, and the woods in that part containing choice sables. Their features are Mongolian, but of a coarser type than those of the Tungooses, the cheek-bones protruding to such an extent as to obscure the remainder of the face when viewed in profile. This tribe excels in the production of *lotkas*, or canoes, light handy boats having curious elevated prows, the extremities of which are fancifully decorated with quaintly carved devices. In the management of these *lotkas* the lion's share of the labour falls upon the women, who handle their short carved paddles with great dexterity and grace; the task of steering—not severe work as a rule—being appropriated by the men, who sit in the stern of the craft, guiding it with a light paddle, whilst blissfully

puffing away at their long stemmed, and flattened paddles. The women in rowing make alternate strokes with their paddles, the instrument not in use trailing in the water beside the canoe; seemingly a clumsy way, but in practice very efficient.

The Gilaks are described as a Pagan tribe, though some of their number have been baptized into the Greek Church; and they are very superstitious to boot. How their Shamans trick and deceive them calls for no special remark, the artifices of these impostors having been already touched upon. When a Gilak dies his remains are buried, and a small wooden house is erected over his ashes by sorrowing relatives. As they believe that the soul after death takes up its abode in the body of a favourite dog, that unhappy animal is sacrificed at the grave of his late master after having been fattened up for the impressive occasion.

Their superstitions are curious, and in one instance barbarous, for when a woman is about to give birth to a child, she is thrust out of her habitation, and ejected from the village, to take care of herself until the infant is born, and a certain time has elapsed. The fearful severity of winter causes no relaxation of this cruel custom; the unhappy mother is turned into the forest, there to wander solitary and ignored, and any one tendering her shelter or assistance would be regarded as performing an almost

criminal action. Whence could such a barbarous custom have had its origin, for they behave tenderly to their dogs in like circumstances?

A Gilak will feel himself dreadfully aggrieved if you ask permission to light your pipe at his fire, fully believing that a single spark taken from his habitation will occasion some great disaster, such as the death of a near friend, or a total failure in fishing and hunting. Indeed superstition may be said to guide the Gilak entirely, and by its laws alone he consents to be ruled. In different localities are found different traditions and superstitions, but "an eye for an eye, and a tooth for a tooth" seems the foundation of their notion of justice. Murder—and for the smallest provocation—is common amongst them, and the task of avenging the crime falls upon the deceased's friends, who usually contrive to knock the offender on the head.

The Gilak habitations are generally erected on posts several feet above the ground, and surrounded by a platform, which affords a convenient receptacle for sledges, nets, and other lumber; a rude ladder, formed by cutting notches in a log, leads to the dwelling. The fire is placed in the middle of the room, and from the rafters overhead dangle hundreds of fine salmon, curing in the dense smoke that always fills the hut.

These people seem impervious to cold, roaming about

bare-footed at a season when an European would incur the penalty of exposing an ungloved hand by the effect of the fingers.

The Yakuts.

This race, supposed to be a portion of the Finnic branch of the Turanian stock, finds its centre on the river Lena, extending at least as far south as the Aldan Mountains. Eastward the Yakuts extend to the Kolyma, and westward to the Yenisei, thus occupying a very large expanse of territory. Latham intimates that their language is intelligible at Constantinople, and that the majority of their words are Turkish, observing also that their traditions bespeak for them a southern origin. He says : "The locality of the Yakuts is remarkable. It is that of a weak section of the human race, pressed into an inhospitable climate by a stronger one. Yet the Turks have ever been the people to displace others, rather than to be displaced themselves." *

The Yakuts are generally of low stature, resembling the Tunguses in feature, though commonly possessing a more pleasing appearance than that race. Their complexion is a light copper colour, and some of their young girls are pretty even to the eye of an European.

Their yurts resemble in every particular those of the Ostiaks, and their dress also is very similar, except that

* "The Varieties of Man." By Robert G. Latham. P. 94.

the Yakuts riding a good deal, both on oxen and horses, some modification in the shape of the *sanayakh*, or outer garment, is necessary to make the wearer comfortable in the saddle. During the middle part of the year a robe made of very pliable leather, stained yellow, is worn, and when seated by the fire both sexes frequently throw aside this covering, leaving the upper part of the body naked. The lower limbs are always clothed in drawers, which reach from the loins to the middle of the thighs; leggings or hide stockings, and waterproof boots, the latter of which are held in high estimation by the Russians, who call them *torbasàs*. In order that they may be equally adapted both to pedestrians and horsemen the *torbasàs* are always cut from their horse-skin, first steeped in sour milk, then smoked, and finally rubbed well with fat and fine soot. The sole is made from the same leather, and the point of the toe turns upwards. They fit the leg closely throughout its length, and the rough usage that a well made pair will withstand is said to be incredible. In extreme cold a tippet of costly fur is worn, and the girls generally put on a stuffed cushion, attached between the *sanayakh* and the drawers, to lessen the effect of the terrible jolting to which the rough pace of a saddle-ox subjects them.

The Yakuts may be termed hippophagists by choice, for although they have large herds of cattle they prefer

horse flesh to beef, rarely slaughtering an ox for food. At a wedding, beef is provided as a matter of ceremony, but the bride presents her husband with a boiled horse's head, garnished with sausages manufactured from the flesh of the same animal, and this diet is likely to remain unchanged throughout both their lives. In fact the Yakuts keep cattle more for the sake of the milk that they yield, and for riding purposes, than as an article of food. Milk is in general request amongst them, and is used largely in their cookery, the supply being obtained from mares as well as cows. To make porridge or bread they gather the under-bark of the fir and larch, which they pound in a mortar and mix with milk. This mortar is curious from the fact that it can only be used in winter—nine months out of the twelve!—for it consists of a bowl-shaped frame of wicker-work plastered with frozen cow-dung, a material that they also employ for lining the inside of their yurts. In common with other Asiatic races the Yakuts are adepts in obtaining a fermented beverage from milk. In the height of summer, when the mares foal, an orgie is held, at which the men drain enormous bowls of this intoxicating liquor, whilst the weaker sex, denied the privileges of inebriation, solace themselves with smoking tobacco until they arrive at a state of semi-consciousness. The distillation of sour milk is also practised, producing a coarse spirit known as *aruigui*, and

in winter they make a beverage from melted butter, which is intoxicating if taken in sufficient quantity. The Yakuts are by no means fastidious in their tastes, eating all kinds of fish and forest animals without scruple, and possessing appetites of which the term "ravenous" gives but a faint idea; into any details of their gourmandising propensities I shall not, however, request the reader to follow me.

Ermann says, and he studied the race so fully that his opinion may be regarded as based on personal knowledge: "Although the Yakuts are considerably inferior in civilisation to the Buddhistic Buriates, yet they possess, in many respects, extraordinary cleverness and knowledge. They have the appearance, rather, of a people who have grown wild than of a thoroughly and originally rude race. Their skilful management of the deerskin, and their expertness in ornamental sewing, are conspicuous in every article of their clothing, and in many details of Yakutian housekeeping to be mentioned hereafter. They seem, in many cases, to have in view not merely the satisfaction of their wants, but decoration also, and pleasing appearance. Yet, while pronouncing this opinion, it is necessary that we should look fairly at the kind of life led by these herdsmen; and, having done so, we cannot feel surprised that everything belonging to them smells of cow-dung, and that their clothes, which

are never washed, very soon take the look and colour of the substance with which they are in perpetual contact. Some productions of Yakutian industry are purchased by the Russians, and sent into Europe, particularly floor cloths of white and coloured felts, which are cut into narrow pieces, and then tastefully and symmetrically sewed together, like mosaic. It is a still more curious circumstance that these people have been able, from the earliest times, to procure themselves certain metals, and have known how to work them. The iron ore of Vilui is smelted and wrought in the yurts of that place, just in the same manner as at Tashkent, or as among the Buriates and the Tartars of Kusnetsk. Long before the Russians came here the other tribes of Yakuts got from those at Vilui iron axes, awls, and tools for stripping and dressing the hides; together with copper ornaments for their clothes and harness, and the metal plates which they, like the Ostiaks, sew on their girdles. But even now, when they make use of European guns, every man among them still exercises the skill peculiar to the nation, in making the great knife, or dagger, which is carried under the *sanayakh* at the waistband. The Yakutian steel is easily distinguished from the Russian by its being somewhat flexible; and yet blades made of it will cut copper or pewter as easily as the best European blades. The wooden handle of the knife is always ornamented,

after the original fashion, with tin work ; from which it is evident that they procured the materials from Nerchinsk, before the Russians knew anything of the metals in that quarter. They cut figures into the wood, and cast the tin into the hollow ; a large knob of the metal, left at the top of the knife-handle, is then shaped with the chisel. The sheaths of these Yakutian daggers are made of birch bark, and covered with black leather, on which, again, are metal mountings, with straight-line patterns engraved on them. I had occasion, once before, to mention some decisive proofs of the influence which the Siberians of the farthest north exercised on the civilisations of the Yakuts. Here, on the other hand, certain handicrafts, characteristic of nomadic life, and, above all, the art of working metals, evidently point to a connection with the tribes at present inhabiting the southern steppes and mountains. The physical character, also, and language of the Yakuts decide in favour of the same view."

"It cannot by any means be maintained that the Yakuts have received the better part of their civilisation, at some time or other, from Mongolian neighbours ; their names for the Deity, for iron, and the other metals, for their fishing gear, &c., are all pure Turkish. They call the intoxicating and distilled drinks made from milk by the same names as the Turkish Tartars. The Yakutian term *aruigui*, which is the name for brandy, common to

all the Turks, from which also is derived our European word arrak, is used also, indeed, by the Buriats and some other Mongolian tribes; but yet it seems to be, in its origin, the property of the Turkish race, with whom it does not stand isolated, but in connection with the names of other kindred objects. "This is the case with the Yakuts, with whom the word *aruñui*, or milk brandy, is a modification of, or is derived from, *arui*, cow butter."

I have dwelt at length upon the reputed Turkish origin of the Yakuts, as the subject is one that possesses a deep ethnographical interest.

These people are Christians, and the manner of their conversion is so very unique, and so utterly unlike anything that was ever before known in the world's history, that it is worthy of record. When the Russians conquered Siberia, the Yakuts were given to idolatry of the worst form, mingled with gross superstitions of the most deplorable nature. Against this paganism the prelates of the Greek Church could make but little way, when suddenly an auxiliary appeared whose power was irresistible, and by a few strokes traced by an autocrat's pen the Yakuts were, without persecution, converted to Christianity. One day an imperial ukase was issued making known that the good and loyal nation of the Yakuts were thought worthy to enter, and were consequently admitted into the Russian Church, to be hence

forth a part of the Czar's Christian family, and entitled to all the privileges of the rest of his children. Such was the tenour of this strange proclamation, and what seems more wonderful is the entire success that attended the measure. The new Christians showed perfect sincerity in their adoption of the novel faith, and the priests have established their sway over the entire Yakut race, without the very smallest difficulty, although amongst the outlying portion of the nation a lingering belief in Shamanism still survives, and the traveller will observe locks of horse-hair attached to the pendant boughs of forest trees by credulous Yakuts, who believe that these tokens will appease the wrath of invisible and malignant spirits. In the old days, when Shamanism flourished amongst them, human sacrifices were common. On the death of a great man, or prince, it was their custom to bury alive with him his oldest servants and favourites, but this abominable practice is now wholly obsolete, although some of the tribe still sacrifice in secret. Mr. Hill mentions a curious instance of his Yakut guides leaving him in a fog whilst they stole off to perform certain mysterious and forbidden rites.

The Yakuts are divided into communities, ruled over by *golorús*, or head men, who are, however, subject to the Russian authorities. They are a more sedentary people than any of the races before described, migrating

only to find fresh pastures for their cattle, the Chukts and Koraks hunt and hunt for their breeding sheep, goats, or poultry. Such as inhabit the inclement region adjacent to the Frozen Ocean have neither horses nor cattle, and keep large numbers of dogs, which drag them to and fro on their fishing excursions. As a race they are cool-tempered, orderly, hospitable, and capable of enduring great privations with the utmost patience; but as regards independence of character they contrast unfavourably with their Tungoose neighbours. Lay a finger on either upon one of the latter and no earthly power will induce him to forget the insult; whereas the more a Yakut is thrashed the better he will work, a difference between the two races well known to the overbearing Cossacks, who are found throughout Siberia, hectoring over the aboriginal population.

The Tschuktschis and Koraks.

These tribes, being divisions of one nation, may be described together, as their manners and customs are almost identical. They inhabit the north-eastern corner of the Asiatic continent from the Kolyma River to Behring Strait and the Gulf of Anadyr, the Koraks lying to the southward of the Anadyr River, and the Tschuktschis wandering over the frozen wilderness adjacent to the Arctic Ocean; the latter are by far the

most powerful tribe. Some writers affirm that they are of American origin, instancing their habit of shaving the head, puncturing the body, and wearing large earrings, in support of this theory ; but Pritchard considers them as belonging to the same great division of mankind as the Tartar nations, though the differences that exist have induced him to class them as a particular group, or subdivision, of the human family, under the name of *Ichthyophagi*, or Fishing Tribes, a title which goes far to describe their mode of life.

These people for many years resisted every attempt made by the Russians either to subdue them, or to pass through their country. Of a force numbering two hundred armed men, who were sent into their barren territory, rather for purposes of scientific exploration than with any views of conquest, not a soul returned, nor has their fate ever been ascertained, although there is little doubt that they fell beneath the arrows which the *Tschuktschis* use with great effect.

In person both the *Koriaks* and *Tschuktschis* are athletic, able-bodied men, rather above than below the medium height, and in many instances appearing gigantic from the quantity of clothing they are compelled to assume in order to baffle the searching cold. Thick blouses of deer-skin, fringed with the fur of the wolverene, forms their ordinary outer garment, which is confined at

the waist by a belt, and ornamented with tassels, beads, or any other piece of finery that they can acquire. Short fur breeches, met by seal-skin boots reaching to the centre of the thigh, enclose the lower limbs; whilst the head is protected by a wolf-skin hood, with the ears of the animal standing erect on either side, the whole imparting a picturesque, if somewhat ferocious, aspect to the wearer.

Owning large herds of reindeer, the Koriaks are obliged to move from place to place in search of fresh pastures, and the roaming life they thus lead has begetten in them a restless love of freedom and independence which revolts against all civilised notions. For the sake of society and mutual assistance they club together in small bands of half-a-dozen families, under the guidance of the wealthiest, or most highly-esteemed of their number, who is styled the *Toion* or leader; but who, in point of fact, has no power whatever over his associates. The *Toion* decides on such matters as choosing a camp, or removing to another spot, but all graver affairs are referred to the men collectively; and if their judgment prove displeasing to any member, he bids his wives pack up and separate himself entirely from the band, which is only held together by mutual consent.

In the eyes of these people all men are equal, and both Koriak and Tschuktschi object to show personal respect to any individual, however exalted may be his rank.

Mr. Kennan relates an amusing instance of this democratic feeling exhibited towards the chief of his party. He says: "The major had become impressed in some way with the idea that, in order to get what he wanted from the natives, he must impress them with a proper sense of his power, rank, wealth, and general importance in the world, and make them feel a certain degree of reverence and respect for his orders and wishes. He accordingly called one of the eldest and most influential members of the band to him one day, and proceeded to tell him, through an interpreter, how rich he was ; what immense resources in the way of rewards and punishments he possessed ; what high rank he held ; how important a place he filled in Russia, and how becoming it was that an individual of such exalted attributes should be treated by poor wandering heathen with filial reverence and veneration. The old Korak, squatting upon his heels on the ground, listened quietly to the enumeration of all our leader's admirable qualities and perfections without moving a muscle of his face ; but finally, when the interpreter had finished, he rose slowly, walked up to the major with imperturbable gravity, and with the most benignant and patronising condescension, patted him softly on the head. The major turned red, and broke out into a laugh ; but he never tried again to overawe a Korak."

The Koriak yurts are built of poles, placed in a circular

position, and covered with loose reindeer skin, secured by long thongs of seal or walrus hide, stretched from the apex of the cone to the ground. Seemingly, then, the dwellings will remain unmoved by even the severest northerly gales that sweep down from the barren steppes or from the Frozen Ocean; but although stable, they are bitterly cold, the temperature of a Kotak tent in winter rarely exceeding 25 Fahr., and to counteract this the natives construct around the inner side of the vast small compartments called "*pologs*," which are formed of skins so closely sewn together as to be almost airtight, and thus warmth and privacy are both obtained. But although the two last-named qualities are highly desirable, a "*polog*" is not without many drawbacks as a dormitory. First of all, it is only four feet high, so the visitor has to enter his cell on hands and knees; then, the light at the night, it is customary to have within a few inches of your nose a wooden bowl filled with seal oil, in which floats a mass of flaming moss to dissipate a darkness that would otherwise be intense. This curious lamp comminates the little air that can find an entrance, and moreover throws out an odour to which the expiring wick of a tallow candle is sweet perfume. Add to this, that a large yurt will have a blazing fire in its centre all night, for the smoke of which there is no escape; that some twenty or more *pologs* will be slung from its sides; that the

inhabitants of these recesses are ignorant of water as a cleansing medium, and that their snoring powers must be heard to be appreciated. When these facts are duly considered the reader will easily imagine that a night passed in a Koriak tent is rarely one of unbroken slumber. Yet, sickening as the many odours and the general atmosphere of a yurt seem to an European, they appear to have no effect upon the health of the natives. The Koriak women, who spend nearly their whole lives in pologs, attain to an advanced age, and sickness amongst them is rare.

According to some travellers these people are of three classes—the civilised or converted, the settled, and the wandering Koriaks; so much akin, however, are their customs that it would be superfluous to describe each separately, their name sufficiently indicating wherein the difference lies. The Greek Church has made a few converts amongst them, but it is very doubtful if Christianity will ever take deep root amongst a people who, though bold and independent, can never be brought to think of spiritual matters in any shape or form. They certainly have Shamans and sacrifice dogs on certain occasions, but the superstitious fears rife amongst the kindred Siberian tribes find no home in the breasts of this sturdy people, and the juggling Shaman has to exercise all his talents to provide himself with bare sustenance.

They are passionately fond of intoxicating liquors, and obtain which they will part with their most valuable worldly possessions; and they have attained considerable and viable notoriety throughout the world for the effect of the beverage manufactured from a species of poisonous mushroom stool, called "*muck-a-moor*" (*Leucaria canadensis*). This fungus is a violent narcotic poison if taken in large quantities, but small doses produce all the effect of alcoholic liquor, although its use is so prejudicial to the nervous system that its sale to the natives is prohibited by law, a wise ordinance too frequently broken by unscrupulous traders, who receive magnificent prices for this noxious poison. Happily for the Koriaks the *muck-a-moor* requires the shelter of timber for its growth, and this their bleak steppes fails to produce. Were they able to gather it themselves, their race would speedily come to an end. The process by which a whole tribe can become intoxicated by means of a single fungus is highly interesting, but so disgusting that I must refer the reader to other authorities for all particulars.

The marriage ceremony among the Koriaks is very curious, and so unique in its character that I extract Mr. Kennan's account of it, and I quite agree with that gentleman in his remark that amongst this race "no other proof of bravery need ever be exhibited than a

certificate of marriage, and the bravery rises into positive heroism when a man marries two or three times."

"The young Koriak's troubles begin when he first falls in love; this, like Achilles' wrath, is 'the direful spring of woes unnumbered.' If his intentions are serious, he calls upon the damsel's father and makes formal proposals for her hand, ascertains the amount of her dower in reindeer, and learns her estimated value. He is probably told that he must work for his wife two or three years—a rather severe trial of any young man's affection. He then seeks an interview with the young lady herself, and performs the agreeable or disagreeable duty which corresponds in Koriak to the civilised custom of 'popping the question.' We had hoped to get some valuable hints from the Koriaks as to the best method which their experience suggested for the successful accomplishment of this delicate task, but we could learn nothing which would be applicable to the more artificial relations of civilised society. If the young man's sentiments are reciprocated, and he obtains a positive promise of marriage, he goes cheerfully to work, like Ferdinand in 'The Tempest' for Miranda's father, and spends two or three years in cutting and drawing wood, watching reindeer, making sledges, and contributing generally to the interests of his prospective father-in-law. At the end of this probationary period comes the great *experimentum*

crucis which is to decide his fate and prove the success or the uselessness of his long labour."

"At this interesting crisis we had surprised our Korak friends. The tent which we had entered was an unusually large one, containing twenty-six poles, arranged in a continuous circle around its inner circumference. The open space in the centre around the fire was crowded with the dusky faces and half-shaven heads of the Korak spectators, whose attention seemed about equally divided between sundry kettles and troughs of 'manyalla,' boiled venison, marrow, frozen tallow, and similar delicacies, and the discussion of some controverted point of marriage etiquette. Owing to my ignorance of the language I was not able to enter thoroughly into the merits of the disputed question; but it seemed to be ably argued on both sides. Our sudden entrance seemed to create a temporary diversion from the legitimate business of the evening. The tattooed women and shaven-headed men stared in open-mouthed astonishment at the pale-faced guests who had come unbidden to the marriage feast. Our faces were undeniably dirty, our blue hunting-shirts and buckskin pants bore the marks of two months' rough travel, in numerous rips, tears, and tatters, which were only partially masked by a thick covering of reindeer hair from our fur 'Kookhlánkas.' Our general appearance, in fact, suggested a more intimate acquaintance with dirty yurts,

mountain thickets, and Siberian storms, than with the civilising influences of soap, water, razors, and needles. We bore the scrutiny of the assemblage, however, with the indifference of men who were used to it, and sipped our hot tea while waiting for the ceremony to begin. I looked curiously around to see if I could distinguish the happy candidates for matrimonial honours ; but they were evidently concealed in one of the closed pologs. The eating and drinking seemed by this time to be about finished, and an air of expectation and suspense pervaded the entire crowd. Suddenly we were startled by the loud and regular beating of a 'barabán' or bass drum, which fairly filled the tent with a volume of sound. At the same moment the tent opened to admit the passage of a tall, stern-looking Korak, with an armful of willow sprouts and alder branches, which he proceeded to distribute in all the pologs of the tent. 'What do you suppose that's for?' asked Dodd, in an undertone. 'I don't know,' was the reply; 'keep quiet, and you'll see.' The regular throbs of the drum continued throughout the distribution of the willow sticks, and at its close the drummer began to sing a low, musical recitative, which increased gradually in volume and energy until it swelled into a wild barbarous chant, timed by the regular beats of the heavy drum. A slight commotion followed, the front curtains of all the pologs were thrown up, the women stationed

themselves in detachments of two or three at the entrance of each polog, and took up the willow branches which had been provided. In a moment a venerable native, whom we presumed to be the father of one of the parties, emerged from one of the pologs near the door, leading a good-looking young Korak, and the dark-faced bride. Upon their appearance the excitement increased to the pitch of frenzy, the music redoubled its rapidity, the men in the centre of the tent joined in the uncouth chant, and uttered at short intervals peculiar shrill cries of wild excitement. At a given signal from the native who had led out the couple, the bride darted suddenly into the first polog, and began a rapid flight around the tent, raising the curtains between the pologs successively and passing under. The bridegroom instantly followed in hot pursuit; but the women who were stationed in each compartment threw every possible impediment in his way, tripping up his unwary feet, holding down the curtains to prevent his passage, and applying the willow and alder switches unmercifully to a very susceptible part of his body as he stooped to raise them. The air was filled with drum-beats, shouts of encouragement and derision, and the sound of the heavy blows which were administered to the unlucky bridegroom by each successive detachment of women as he ran the gauntlet. It became evident at once that despite his most violent efforts he would fail to

overtake the flying Atalanta before she completed the circuit of the tent. Even the golden apples of the Hesperides would have availed him little against such disheartening odds ; but with undismayed perseverance he proceeded on, stumbling headlong over the outstretched feet of his female persecutors, and getting constantly entangled in the ample folds of the reindeer-skin curtains, which were thrown with the skill of a matador over his head and eyes. In a moment the bride had entered the last closed polog near the door, while the unfortunate bridegroom was still struggling with his accumulating misfortunes about half way around the tent. I expected to see him relax his efforts and give up the contest when the bride disappeared, and was preparing to protest strongly on his behalf against the unfairness of the trial ; but, to my surprise, he still struggled on, and with a final plunge burst through the curtains of the last polog and rejoined his bride. The music suddenly ceased, and the throng began to stream out of the tent. The ceremony was evidently over. Turning to Meroneff, who, with a delighted grin, had watched its progress, we inquired what it all meant. ‘Were they married?’—‘Da’s,’ was the affirmative reply.—‘But,’ we objected, ‘he didn’t catch her.’—‘She waited for him, your honour, in the last polog, and if he caught her there it was enough.’—‘Suppose he had not caught her there, then what?’—

‘Then,’ answered the Cossack, with an expression of commiseration, ‘the caidrick (poor fellow) would have had to work two more years.’ This was pleasant to the bridegroom! To work two years for a wife, undergo a severe course of willow sprouts at the close of his apprenticeship, and then have no security against a possible breach of promise on the part of the bride. His faith in her constancy must be unlimited. The intention of the whole ceremony was evidently to give the woman an opportunity to marry the man or not, as she chose, since it was obviously impossible for him to catch her under such circumstances, unless she voluntarily waited for him in one of the pologs. The plan showed a more chivalrous regard and deference for the wishes and preferences of the gentler sex than is common in an unconstructed state of society; but it seemed to me, as an unprejudiced observer, that the same result might have been obtained without so much abuse of the unfortunate bridegroom!”

The curious ceremony thus graphically described, is doubtless derived from the time when these people made raids amongst their neighbours, and carried off women as captives of their bows and spears. The Tschuktschis frequently have female captives obtained in this manner from the American tribes on the opposite side of Behring Strait.

A favourite dance amongst the Koriaks is also peculiar, being conducted exclusively by the fairer sex. The performers commence by uttering a succession of low and peculiar ventral grunts, to each of which they keep time by ducking down abruptly into a squatting position, whilst undulating their bodies, and waving their arms wildly in the air. Gradually these movements become more rapid, the grunts altering in tone ; and when they have warmed to their work, they manage to throw themselves into every conceivable posture, distorting their features, uttering frantic yells, and looking quite diabolical in the flickering light. By some secret means they contrive to crack their joints as an accompaniment to the unearthly groans and squeaks that they keep up without intermission, until their voices become too hoarse for further utterance, and they fall to the ground completely worn out by fatigue and excitement. Trials of skill with the bow and arrow, and wrestling bouts, are amongst the other amusements of this people.

The Koriaks probably own larger herds of reindeer than any other tribe in Siberia, one of their number possessing no less than thirty thousand of these animals. Tending his herd is the chief occupation of every Koriak, for a vigilant look-out is requisite day and night both to supply the animals with food and to drive off the wolves that are always hovering around them. During

the long winter night, when the magnificent hues of the *aurora borealis* are obscured by the blinding snow that a northerly gale drives before it—when all is dark, lonely, and inexpressibly dreary, then the Arctic wolves, goaded by famine, fling themselves upon the Koriak's herd, and scatter his antlered charge to the winds of heaven. On such occasions the watchful sentinel is powerless to avert the mischief, but all that skill and an endurance almost superhuman can accomplish, he brings to bear upon the trying task before him. No amount of snow, of frost, of storm, of misery, will induce the Koriak to desert his flock and seek shelter in his yurt. The fleecy drift may half blind him, the blood may stagnate in his veins, and the flesh turn livid and mortify, but still he remains faithful at his post, constant as the Roman sentinel beneath the fiery torrent of Vesuvius. Think, reader, what it must be, a life spent thus in the awful solitude of the howling tundra! We may search far before we find a parallel to the stubborn endurance manifested through life by these poor pagan savages.

A curious superstition is rife amongst the Koriaks regarding the reindeer. They will sell a traveller as many dead animals as he likes to buy, but neither love, money, —no, nor brandy—will induce them to part with a single deer as long as life remains in his body. This superstition holds good, also, amongst the Tschuktschis, although

neither tribe are able to explain the meaning of the custom. Offer them five hundred pounds of tobacco for a live reindeer and they will refuse it ; let them turn it into venison and the carcase is yours for a string of glass beads. During the two years and a half that the members of the Russo-American Telegraph Company were scattered over Siberia, not one of their parties succeeded in purchasing a single living reindeer from either the Koriaks or Tschuktschis, notwithstanding the enormous price in tobacco, copper kettles, &c., that they offered for what, to them, was an absolute necessity. The eight hundred deer that they eventually owned, were supplied by the Tungooses.

The numerical strength of these two tribes can only be roughly computed ; the latest authorities state that they number between six and seven thousand souls.

The Yukagires.

Of this race but little is known, and, as they are rapidly becoming extinct, no record of their existence save the name will be found in Siberia a century hence. The remnant that remains of a numerous and powerful nation inhabits the shores of Eastern Siberia, beyond the Lena, between the country of the Yakuts and that of the Tschuktschis and the rivers Indijirka and Kolyma ; but the head-quarters of the Yukagires is on the River

Anyui. There they maintain themselves during the whole year on the reindeer they kill in spring and autumn. At these seasons the swarms of mosquitoes that enter the forest drive the tormented animals to take refuge in the sea and rivers, and not until winter again flows about returning do they venture back to the wood, the bull leading the way, followed after the lapse of a few days by the does and their young fawns. Posted under cover, the Yukagires discover the place where the bull will make the passage of some stream, and conceal their light canoes under the banks until the animals take the water. Then they push out from their lurking places, and have to cut the helpless deer off from either shore, prepared to slaughter them whilst swimming, with long spears, which they use with marvellous address, reaching a vital part with every thrust. Should an animal be only wounded, the women throw nooses over its horns, and drag it to the shore. Immense numbers of reindeer are annually killed in this manner by the Yukagires. Such of the race as live in the vicinity of Russian settlements, are in the habit of visiting their civilised neighbours during the two months of uninterrupted darkness of the Polar night, to obtain little luxuries, and especially tobacco, in exchange for skins. This tobacco—the coarse species of the Ukraine—they mix with wood-chips, to make it go further, and in smoking, not a whiff is allowed to escape into the air,

but inhaled and swallowed, when it produces a somewhat similar effect to a mild dose of opium. Tobacco is the first and greatest luxury of these poor savages; women and children all smoke, the latter learning the accomplishment as soon as they are able to toddle; and if any funds remain in hand, after the requisite supply of tobacco has been laid in, they are devoted to the purchase of the next best animal pleasure—brandy. A Yukagire never intoxicates himself in solitude, but calls upon the whole family to share his joys, even children in arms being supplied with a portion of the brain-devouring poison.

One anecdote mentioned by Mr. Cottrell will show how high-minded and honourable these people are. The traveller was told the story by M. de Hedenström, the celebrated explorer and naturalist, then a resident in Siberia. “The Yakagires on the Anuiy are on terms of intimacy with the Russians of Nijni Kolynsk. When their stock of rein, *i.e.*, flesh of reindeer, is laid in, the Russians go and pay them a visit for a week or more, during which time they and their dogs are fed gratuitously. When they go away, the Russian begs of his host some provision for the journey. The answer is, ‘Help yourself,’ and the Russian friend has no false modesty about so doing, but fills his sledge so that the dogs can hardly drag it along. In his turn the Yakagire goes into the town, and is hospitably treated the first day by his former

guest, but after this he must pay for the food of himself and his dogs. M. de Hedenstrom asked one of them one day why he did not treat the Russians, when they came to pay him a visit, in the same manner. His answer was, after a moment's reflection, *K'w'at'at'at'*, or, On whose side is the shame? a reply which few Christians would have been prepared with.

Constant wars with the Koriaks and Tchukchis have reduced this race to the handful that now exists.

The Samœides.

This race of people, inhabiting the shores of the Frozen Ocean from Archangel in Europe to the Lena in Eastern Siberia, are numbered amongst the human family under the head of Hyperborean Mongolids. They are split up into numerous tribes, and Latlaim breaks them into two divisions, a northern and a southern, the former dwelling in the inclement regions above indicated, the latter finding a home within the limits of the Chinese Empire, and being entirely separated from their brethren by other branches of the human race. With this section of the tribe we shall not concern ourselves in these pages.

The Samœides have broad, round, and flat faces, thick lips, open nose, very little beard, and long coarse black hair. As a race they are very diminutive in stature, for a man who stood five feet six would be considered a giant

amongst them ; but they are stoutly built and very muscular, more so even than the Ostiaks, with whom they are often improperly confounded.

The dress of the Samöeides much resembles that of their neighbours in material and shape, but the malitza of the men opens down the front, whilst the women wear a short pelisse, so that the sexes are more easily distinguishable than amongst the Ostiaks. This latter garment is adorned by its fair wearers with the various coloured skins of the wolf, fox, and glutton, amongst which a piece of European cloth is not unfrequently found inserted ; whilst, as the finishing touch, a wol-verene's tail dangles from the back of the dress, giving the lady a highly ludicrous aspect. Indeed the Samöeide women are very vain of their personal appearance, particularly of their hair, which they plait into a queue hanging down the back, and ornamented with pieces of metal that give forth a musical chink when they move. Nothing seems too costly for this purpose, and one traveller found a Samöeide matron who had, amongst other brass and iron fragments, ornamented her tresses with the lock of an old musket, rusty, it is true, but otherwise quite perfect.

Amongst this people Shamanism finds its principal stronghold, but the mode of procedure adopted by these men requires no particular comment. They sacrifice

frequently to appease evil spirits, and it is whispered that the victim is sometimes a human being. This, however, is, I imagine, pure conjecture, for I can find no authenticated instance mentioned by any reliable authority.

The Samöicides have large herds of tame reindeer, but make use of them for draught purposes only. Their sledges are generally ornamented with carved mammoth-teeth, and the dolphin-skin traces and seal-skin furniture show how dependent they are upon the Arctic Ocean for the necessaries of life. They live principally upon the produce of the chase, the vast herds of wild reindeer that roam over their territory yielding them an abundant supply of meat. The name Samöicides is said to mean "Salmon-eaters," and occurs in the Russian chronicles as early as the year 1096; they are also mentioned under that title by Plano Carpini, in the account of his journey to the court of the Great Khan, in the beginning of the thirteenth century. The whole race were, at that time, amongst the subjects of the Mongolian Emperor.

They are a very numerous race, the various tribes of the Northern Samöicides being computed to number seventy thousand souls.

The Kamtchadales.

This race, classed by Latham amongst the Peninsular Mongolidæ—in which are included the Koreans, the

Japanese, and other island peoples—inhabit the southern half of the Peninsula of Kamtchatka. The true Kamtchadales are now nearly extinct. Russian ill-usage, the introduction of ardent liquors, various diseases, and curiously enough, suicide, having reduced them from a populous community to a few wretched families.

In features, dress, and manner of living, they so closely resemble other Mongolian tribes already mentioned, that no particular description of them is necessary. Their principal occupations are trapping, fishing, and the cultivation of rye, cabbages, turnips, and potatoes, which yield them scanty crops in return for the small amount of labour they bestow upon agriculture. The Kamtchadale villages are few in number and widely scattered, whilst the only means of transport are dog-sledges, pack-horses, or canoes, and the country is absolutely without a road throughout its length or breadth.

A Russian officer, residing at Petropaulovsk has nominal jurisdiction over all the inhabitants, and collects the *yassak*, or yearly tribute of furs. Other members of that nation—generally convicts or exiles—are found in most of the villages, engaged in trading for furs with the Kamtchadales and the wandering Koriaks further north.

The small remnant of this race now left are nominally members of the Greek Church. Their own religion was much more enlightened than that of their neighbours,

for Steller tells us that they believed in the immortality of the soul. All creatures, even to the smallest fly, are, according to the Kamtchadales, destined to another eternal life under the earth, where they are to meet with similar adventures to those of their present state of existence, but never to suffer hunger. In that world there is no punishment of crimes, which meet their chastisement in the present life, but the rich are destined to endure poverty, and the poor here to succeed to wealth. The sky and stars existed before the earth, which was made by Katchu, who then left heaven and came to dwell in Kamtchatka. He had a son, Tigil, and a daughter, Sidanka, who married and became parents of offspring, the latter clothed themselves with the leaves of trees, and fed upon the bark, for beasts were not yet made, and the gods knew not how to catch fish. When Katchu went to drink, the hills and valleys were formed under his feet, for the earth had until then been a flat surface. Tigil finding his family increase invented nets, and betook himself to fishing.* The pagan Kamtchadales have rude images of their gods. Latham remarks that *Tigil* is the name of the chief river of the peninsula.

That sacrifices are still in vogue amongst these people is evidenced by their killing a dog in Mr. Kennan's presence to propitiate the evil spirits of the mountain. The

* Pritchard's "Physical History of Mankind," Vol. IV, p. 449.

entrails of the animal were thrown to the four corners of the earth, and the body suspended by the hind legs from the top of a long pole, set perpendicularly in the ground. In the instance he records the sacrifice proved of little avail, beyond working a manifest improvement in the spirits of his superstitious followers.

Such is a brief, and necessarily imperfect account of the principal native races inhabiting Siberia ; and when we compare their former condition of undiluted paganism with their present state of imperfect Christianity, we are bound to acknowledge that the Muscovite yoke has on the whole benefited these rude savages. Disease introduced by the Russians, and brandy, have doubtless wrought much evil ; but all tribal wars are now at an end, and the various races have learnt to turn their undivided attention to the arts of peace. Still they are dwindling away ; broad though that inhospitable area of steppe and tundra may be, it is too circumscribed for the conquerors and the conquered to dwell side by side. The savage will sell his very raiment for brandy, and unscrupulous traders will take advantage of his weakness to the end of the chapter. Years may elapse before it comes to pass, but the aboriginal races of Siberia are doomed ultimately to perish, done to death by Russian alcohol.



CHAPTER X.

FOLK LORE.



NOW proceed to give a few specimens, taken from the exhaustive work by M. Castrén, on the ethnology of the Altai races, of the stories rife amongst these people, curious as exemplifying the narrow circle which bounds their intellectual horizon.

The reader will remark that no single object, animate or inanimate, is adverted to in these legends that does not fall beneath the every-day observance of their vagrant authors. The baldness of the language and the poverty of expression apparent throughout them, remind us in style of the stories still popular in our own nurseries, and this is, of course, to be attributed to that mental deficiency which attaches itself to untutored savages hardly raised above the level of the pre-historic cave-dwellers of southern Europe, between whom and the inhabitants of the frozen north, an ingenious parallel has

been recently drawn in a learned paper read before the Imperial Academy of St. Petersburg by M. Bohakoff.

These legends being derived solely from oral sources, I have attempted to preserve the simplicity of their diction as far as possible, even at the risk of offending more polished tastes.

FOLK LORE OF THE SAMÖIEDES.

Story No. 1.

At one and the same place stood seven hundred tents. In the seven hundred tents dwelt seven hundred men. Over them ruled seven lords. The seven lords go ever and ever to the feast ; they do nothing, they only go to the feast. They are brothers, the seven lords, and they all have wives, but no children ; only the eldest of them has a son, who is not grown up. He goes not to the feast, he sleeps ever and ever ; night and day he sleeps. Once upon a time said the father to his son, "Get up and go with the rest of us to the feast." The son wished not to go to the feast, he has had a bad dream ; he has dreamt that all the others were dead, and he alone remained alive. He tells his father the dream, and says, "You still may live if you offer seven and seven (fourteen) reindeer." "What dost thou know?" answered the father. "Thou sleepest day and night, and knowest less than a dog." "As thou wilt, father," answers the son,

and lays himself down to sleep again. In the morning he awakes and sees that of the seven hundred men not a single one was alive, that they all were dead. He goes to look at the reindeer; all the reindeer had perished. He looks after the dogs; these also were lying dead. Then he goes to the sleighs, takes a sword and hacks to pieces all the tent ropes with it; all the tents tumble in a heap. Afterwards he begins his wanderings. He goes a day, he goes two days, three days, he goes seven whole days. He looks behind him, he still sees the place where the seven hundred tents lie fallen down. He goes again seven days, looks behind him, still sees two of the fallen tents. He goes seven more days; he looks behind him, he now sees no more of the tents. He begins to go again, goes a month, goes two months, three months, goes seven whole months. Then at last he tires of going, he has gone whole months without food; it was a dreary place through which he went. He sinks down upon the snow. There he lies, he lies a long, long time; he gets up, he begins to go again; goes, goes, comes to a place where a tent had stood before. He searches for food, finds a bone that the dogs had picked. He gnaws at the bone, throws it away, and begins to look for other bones under the snow. There he finds silver earrings, places these in his gloves, and begins to wander again. He goes, goes, he goes a long while; then one day he

sees something in the far distance, which was driving with reindeer. The driver drove towards him, comes nearer and nearer, it is a woman. The woman says, "Thou comest from the tent; didst thou not find there the earrings which I have lost?" "Yes, I found them and took them." "Then give them me, they are mine," begs the woman. "Well, I give thee the earrings, but do thou drive me with the reindeer to a place where men live." Then the woman took her spear and smote him with the spear, so that he fell and remained lying on the place. The woman took the earrings and drove off.

The smitten man lay and slept, slept a long while; at last he woke, stood up and began to go further. Again came he to a place, where aforetime a tent had stood. He begins again to search for food, and finds a bone, which the dogs had picked. He gnaws the bone, throws it away, and searches for other bones under the snow. He finds there an iron shovel. He takes the shovel and begins to go on his way. He goes, goes, and sees again somebody driving with reindeer; a beautiful woman in splendid attire comes towards him. The woman says, "Whither goest thou, my poor boy?" "I go upon fresh tracks that I have found. I am hungry, and would eat, else I starve." "Thou comest surely from our old camping place; didst thou not find there an iron shovel?" asks the woman. "A shovel I have certainly found, but

know not to whom it belongs." "It is my share, I came driving to look for it." "I give thee the share, if thou promisest to drive me with the reindeer to my habitation of men." "Willingly will I drive thee to my house at home," said the woman; "wherefore should I not drive him, else, in sooth, the man starves. I will also cherish and feed thee." He gave the shove, the woman took him into the sleigh; they started off. In the sleigh asks the woman, "Whence art thou, my poor boy, for I know thee not?" The boy answers, "No one in the world knows me, I am a poor fatherless and motherless orphan. There were once upon a time seven brothers; they were rich; they had seven hundred tents. "I have heard of these seven brothers, but what way have they taken?" asked the maiden. "They died, all died in one night, and in the same night died their seven hundred reindeer." The woman asks, "Knowest thou to whom this pair of reindeer with which thou now drivest belongs?" "How can I know that? In sooth I know not much; of a truth I am not yet old; but they are like unto the reindeer of my father." "How have thy father's reindeer come to us?" continued the maiden to ask. "That know I not," answers the boy. "Seest thou," says the woman, "thy father was once upon a time here with these reindeer, and wooed me for thee. Thy father gave to me this pair

of reindeer, and this iron shovel, as bride gifts. He gave also a sword, but this we have not, it is stolen." "The sword can I easily find, little by little," thinks the boy. "Then art thou my husband," says the maiden.

Thus came husband and wife to the tent, and lived there together.

After they had lived there some time, the folk began to change the encampment. They yoked the reindeer, but before the sledge of the novice they yoked vicious reindeer, and left him to drive last in the train. With his vicious reindeer he soon remained behind after the rest. He urges on the reindeer, but these obey not. Suddenly the whole train makes a halt; he overtakes his companions. Somebody says, "What kind of a following hast thou behind thee?" "Not a single soul, I have come all alone," answers the stranger, glances however behind him. At the same instant the questioner took a spear and struck him down. He remained lying there; the others travelled on their way. The woman, however, remained behind, and began to weep over the dead man. She sits upon their sledge and weeps. Suddenly their reindeer become restive, and hasten after the rest. Forthwith thereupon comes a one-legged, one-handed, and one-eyed old greybeard to the dead man. In his one hand he carries an iron staff. With this he smites the dead man and says, "Why liest thou there?"

'tis time to get up! Get up and go back thy father lives, and all thy brethren are alive again.' The dead man awakes and begins to speak with himself. "I have slept a good while; but what kind of a man was that who told me that my father is alive, and bade me to take myself back?" He looks round about, but sees no one, and believes he has been dreaming. He wanders forward, comes to the tent and lays himself by his wife to sleep.

In the morning all get up; they begin again to break up the camp, yoke the reindeer before the sledge, give the stranger vicious reindeer, and leave him to drive the last. With his vicious reindeer he remains behind after the rest; but these make a halt, and he overtakes them. Again the man in front of him asks, "What people come there behind you?" "No one comes behind me," answers the stranger, but looks behind him, and in the self-same moment the man for the second time thrusts him through with his spear. They leave him there, his wife too travels on with the rest: she thinks thus, "He is not dead, he comes all well at his own time to the tent." After they have driven away, the one-legged, one-handed, one-eyed old greybeard comes. He smites the dead man with his staff and says: "Already yesterday I told thee that thou shouldst turn back: what doest thou there in the tent? But turn back in earnest: if thou wouldst have a care for thy head. Thy father is

alive, and has already lived long." The dead man rouses up, looks round him, and says, "What man can he be who prays me to turn back, who speaks of my father, and avouches that he is alive? he is dead in truth, now for a long time." He sees no one, again believes he has been dreaming, travels on to the tent, and lays himself down by his wife's side to sleep.

On the following morning they begin again to break up the camp; they yoke the reindeer, give the stranger the most vicious, and place him last in the train. He remains as before, behind after the rest; they make a halt, he comes up with them. "Look how many reindeer come after thee there!" says the same man who had killed him twice before. He looks round him; in the self-same moment the man strikes him down with his spear. The rest draw on farther. Then came the one-legged, one-handed, one-eyed old greybeard, smote the dead man with his iron staff, and says, "The third time, I tell thee turn back. Thou hast been slain twice, I have both times brought thee again to life, but now I do it no more." He stands up, but turns not back; he goes to the tent, but he steps not into the tent, but seats himself upon a sledge. He begins to forbode that they will murder him. He takes then the bows from the sledge, destroys them all; goes to his wife's sledge, takes from it the same iron shovel which he had found and given back

to her, beats down all the tents with the shovel. The folk run out, he sets upon them with the shovel. They run to the bows, but these are all broken to pieces. He continues to hack away, he hacks away and beats them all down. His wife he smites not down, as also not her father, her mother, and her children. Now he begins to scan the dead bodies; he finds not him who had taken his life three times. He was fled, but his track was clearly to be seen upon the snow. He begins to follow on the tracks, runs long, at last overtakes him. Now began both men to smite one another, they smote one another the whole winter on the same spot, they smote one another till both fell down and died. There lay they now the whole summer and rot there. Foxes run, wolves run, eat up the bodies, gulp down everything save the bones. The autumn came on; there came too the one-legged, one-handed, one-eyed old greybeard. He speaks to the stranger man: "How art thou come to thee that thou must turn back? Now say I it to thee for the last time, later my power may not be of avail to aid thee." He takes his bones, gathers them all together, even to the smallest bits, places them all in a sack, takes the sack upon his back, and wends his way. When he had gone on some time, he came to a large stone. He kicks against the stone, it rolls aside. Under the stone is a hole; the greybeard crawls into the hole. There

there is a darker and a gloomier place, where ring shrill shrieks and howls. They wish to tear the sack away from the greybeard. He sees straight before him something bright, which is like unto a window. By the shining of the light he descries men who are naked, without skin, without covering, with mere bare bones. The teeth grin in their mouth. The greybeard goes boldly up to the light; he sees a tent, steps into the tent; there there is no one, only a woman. She sits on the hearth. Upon the other side stand two monsters; they move not, they speak not; their eyes are very big, and stand straight up in their head. The greybeard throws the sack upon the ground, and says to the woman, "Here hast thou fuel, throw it on the fire." "It is well that thou hast brought some," answers the woman, "I was already quite without wood." The old woman makes up the fire, throws the bones into the fire; they all burn to ashes. The old woman takes the ashes, strews them upon the bed, and lays herself thereon to sleep upon the ashes. After three days there is born from the ashes a man. He begins to ask himself, "What kind of a dusky place is it where I have been sleeping?" He arises, looks round him. In the tent is no smoke hole. He wishes to go out, finds no door. He tries the walls, they are of iron. He says to the old woman, "I would forth, but find no door." The old woman arises, kicks with her

foot against the wall; it opens. He goes in, looks quickly back; sees the two monsters standing behind upon his nose. He arises, and takes the old woman. "What monsters hast thou here? are they men or wild beasts?" The old woman answereth, "They are wild beasts, they are my forefathers." "Do they eat, and what do they do?" "They do not eat, they do not do anything at all." "Who are they then, and have they always been so?" "Oh, truth not always; they were good men in their time, but they became stones, and are stones up to this very hour. They hear nothing, they see nothing, and they know nothing."

The old woman says to the stranger, "What do thou wish for most in the world?" The stranger answereth, "If I knew where my wife now lives, then would I go most gladly to her." "Live thou with me for a time, and come my reindeer, and they will take thee to her. But thou must take me for a wife, else I turn thee into stone. Now the stranger noted that the old woman had turned the two men who stood upon the hearth into stones, and he feared that the same thing might happen to him, and he deny to take the old woman to wife. He saith therefore, "Well, come on, I take thee for my second wife." They lived so three days in the tent together. After that came the reindeer. They both seat themselves up in the sledge, and drive away. At first they drove through the

gloomy places. The lean folk run after them and wish to stab the stranger with spears, but cannot reach him who drives with reindeer. At last they come to the clear white light. The old woman speaks to her husband, "Push that stone there out of the hole!" He tries to move the stone, but he cannot stir it from the place. The old woman kicks it with her foot right beyond the hole. They drive away, drive a long long time; see a tent, drive to the tent. Here the stranger finds his first wife, her mother, and her father. He took both wives and the parents of his first wife with him; so he travels to his first native land. When he comes near to his home, he sees all the seven hundred tents, many folk, and many reindeer. All were alive again. A little way off from the road he sees the one-legged, one-handed, one-eyed old man. The old man runs after him, and with the old man runs another man—it is the self-same man who had slain him thrice. He begins to deal blows with his murderer, and strikes him down. Hereupon he loses his recollection, and in his rage kills the one-handed old greybeard. Then he drives on to the tents; here all were dead, the people had died and the reindeer lay dead. Now also the two wives died. So they all died, and he was again alone, after he had slain the one-legged, one-handed, one-eyed old greybeard.

Story No. 2.

In one and the self-same tent dwell two women, the one young, the other old. The young one has two children, both girls, the old one is childless. The young one sews clothes for her children, the old one lies there without anything to do. Once upon a time says the childless woman to the other, "Let us go and pick the shoe grass." The other replies, "I have not spare the time, I must sew clothes for my children." Nevertheless she goes. As they gather the shoe grass out of the field, the childless woman takes her knife and stabs the woman who has two children. So makes a fire, roasts the flesh, eats it. The head she says, "I will eat it up another time." She goes into the tent, the children ask, "Where is mother?" "Mother is gathering shoe grass; she comes to be sure, when she is tired," answers the old woman, and lays herself down before the door to sleep, so that the children do not suspect she thinks to eat up them also, when she awakes. While she sleeps there, the elder girl softly slips out from the mosquito curtain (*balagan*). The old woman sleeps, the girl goes out to the door. She finds the head of her mother, and thinks thus, "The old woman has eaten my mother; when she awakes she will also eat up me and my sister." She catches two birds alive, puts them in

the balagan, and runs away with her sister. The old woman sleeps seven days, awakes, goes to the balagan, and now will eat the children up; finds however only the two birds. "Ye escape me not," thinks the old woman, and begins a chase after the girls. She runs seven days, overtakes them, and will seize the younger girl, who runs behind. The elder girl throws a whetstone behind her. Immediately there flows a river along, steep hills arise on both banks of the river. The old woman remains standing behind the river, the girls escape. The river flows seven days and dries up. The old woman follows after the children again; she runs seven days, comes up with the girls, will lay hold of the younger. The elder one threw a flint stone behind her, and immediately there arose a higher hill. The old woman remained standing behind the hill. After seven days the hill vanishes. Again the old woman begins to run. She runs seven days, overtakes the girls and will seize the younger one. The elder one throws a comb behind her. Then arises a thick forest, so thick that the old woman cannot get through. The forest vanishes after seven days; then again the old woman began her chase. When the children had run three days, they came to a place where a short time before a tent had stood. There sit now seven crows, and eat reindeer filth. The oldest girl says to one of the crows, "Little

mother, show us the way to a place where men never grow old." The crow answers, "Go thee ever farther and farther forwards, then come ye to the blue sea. There ye shall find seven sea mews, who will show you your way to the men." The girls ran again seven days, came to the blue sea, found the seven sea mews. "The sea mews are made of flesh." The elder girl said to one of the sea mews, "Little mother, whither shall we go to find men?" The sea mew answers, "Go ye along by the coast, for there lies an island between two rocks. Upon that island dwells an old woman; she carries you over the strait." The girls ran seven days, came straightway without trouble to the island, saw a tent, began to call and knock. The old woman comes out of the tent; she begins to ask the little maids, "What is my face like?" "It shines like the sun," answers the elder girl. "What is my breast like?" "Beautiful as the red-leaved apple-tree." "My hands and feet (arms and legs), what are they like?" "Thick and fat as the flesh of the sea-butter." The old woman uttered a cry, a beaver swam to the maidens, and brought them across the sound.

Scarcely were they come to the island, when the gruesome old woman came hastening after the girls. She remained standing on the bank, and begged the other old woman to carry her over the strait. The old woman from the island asks the horrible old be-lane,

“What is my face like?” “Thy face is ugly; it looks like the hinder quarter of a beast,” answers the hideous old woman. “What is my breast like?” “Like the breast of a dog.” “My arms and my legs, what are they like?” “They are like spoon shanks.” “What didst thou see upon the way?” further asked the old woman from the island. “Seven crows,” answers the horrid old hag. “How do they live?” “Very badly I trow, that they live no longer, their food was reindeer muck.” “What further didst thou see?” “Seven sea mews.” “How do these live?” “Badly; they eat only seal’s flesh.” The old woman of the island shrieked out, a sturgeon swims to the horrid old hag. The old woman of the island says, “Seat thyself upon the sturgeon.” “How can I sit here, his back is sharp and prickly? here I can’t sit. Tell me, how came the girls across the sound?” asked the horrid old harridan. “Upon the self-same sturgeon,” answers the island old dame. Then the frightful old hag seats herself upon his back. The sturgeon swims far from the island. Swims farther and farther, and drowns the old witch.

The girls lived with the old woman upon the island; they lived there a long time. The elder one began to feel it wearisome, she speaks to the old woman: “Show to us another place, where more men do dwell.” The old woman says, “Go along the footpath on the

island, then come ye to the shore. In the shallow is a boat of copper. Sit yourselves in the boat; without oar, without sail, it carries you to people. But in the boat are many dangerous tools; axes, knives, gimlets. Touch not them, and thou, the elder sister, take heed to the younger, that she touch none of them with her hands. Take them not in hand, and they strike you dead, and ye lie dead still. Sit therefore quite quiet, and ready at the far end, then say to the boat, Boat, go back to the place whence thou art come. Then comes the boat back again." The maidens followed the boat, and came to the shore; upon the shore was a shallow, and in the shallow a boat, in the boat axes, knives, gimlets. The elder sister pushed the boat into the water, and carried her sister. The boat runs of itself; it carries them over the sea, and comes at last to a river, and begins to go back again against the stream. On the river bank grow many trees of every kind, birches, firs, dead trees. At one place stand two great larches. They stand on either side of the stream, their tops are grown together. The river runs through between the trees. "See what a beautiful place," says the elder sister. The younger one takes a knife, in order to cut a bough from the tree. The knife strikes her dead, she dies, and the boat remains stranded on the bank. The elder sister lifts the dead sister out of

the boat, and says, "Boat, go back thither, whence thou art come." Immediately the boat turns back. The elder girl goes now to bury the dead sister, and drags her into a pine forest. She asks her sister by means of the magic drum, "Where shall I bury thee, sister—somewhere here?" The sister replies, "Bury me not in the pine forest, there go people and affright me." She drags her farther, sees a birch wood, asks again by means of the magic drum, "Shall I bury thee here?" The sister answers, "Bury me not in the birch wood, there go people, hew down birch trees, and affright me." She drags her still farther, comes to a forest of fir, asks by means of the magic drum, "May I bury thee in the fir forest?" The sister replies, "Bury me not in the fir forest, there go children, break branches, and affright me." Then is the sister weary of the dragging, sees a birch copse, says, "There I bury thee; my hands smart, I can drag thee no farther." She comes to the copse, finds there a wolf's den, lays her sister in the den. She herself goes on her way, goes farther and farther, several months goes she.

Winter comes on, still she ever goes on. She comes to a footpath, she follows the footpath, arrives at a stream; up on the stream stand two sledges, reindeer are yoked in them, before the one is a speckled, before the other a milk-white reindeer. There are no men there. The

maiden thinks, "I will await here for the noon." In good time, they have gone into the forest. The whole day, she waits till the evening. Then come two men out of the forest. The elder man says to the maiden, "Wilst thou not drive in the sledge to our house at home?" "No," replies the maiden, "I am on foot; I am ashamed in the presence of men." The elder man, who had a milk-white reindeer, says to the younger, "Take the maiden, and seat her in the sledge." "I will have no one in my sledge, take her thyself," answers he. The elder man, who had the milk-white reindeer, took the maiden into his sledge, and drove with her home. Here stands tent after tent, and over all these tents rule only two lords. Each of them had a son. The men who came out of the wood were their sons. The maiden begins to live here; the elder of the two men takes her to wife. They live long together.

Once upon a time they begin to break up the tent; they travel for a day, two days, three days; thereupon they make a halt. In the night bad weather comes on, and the wolf scatters the reindeer. On the following day the two sons drive to look for the reindeer. They drive about in different directions. At one spot the reindeer of the elder man become restive. He begins to look round to see why the reindeer have become restive, sees a wolf's den, hears the wolves howl, hears also a sobbing,

he listens and listens—it is a woman that sobs there. He says, “Weep not, my child, thy father brings thee meats.” He drives home again. His father asks, “Didst thou find the reindeer?” The son answers, “Reindeer found I not,” but says nothing of the wonder that he had seen. In the night he tells all to his wife, relates how the wolf-cubs howl, and the woman sobs. His wife says, “Must it not be my sister who sobs there? I buried her there. Let us go back to the spot.” On the following day they all drive to the wolf’s den. They come to the place, and the wolf has run away; the cubs and the woman were there. They struck the cubs dead, but they took the woman, and brought her to the tent. She is like one who is silly, she only shrieks. They make a fire, and place her near the fire. She looks at the flames, and after she had gazed a long time at them, she awakes and says, “Have I slept long?” “Long, sister, very long. We sailed with the boat that the old woman upon the island had given us, thou stabbest thyself, and didst die. I buried thee in the wolf’s den, and there my husband heard thee sobbing yesterday.” The younger sister now begins to live in the tent whither they have brought her. She becomes the wife of the younger son with the speckled reindeer.

Story No. 3.

There was a village. In the village were seven hundred tents. In the seven hundredth tent children wrangle ; they play and wrangle. Some say, "We have a cleverer Tadibe" (Shaman). But the other, "We have a better." As they wrangle, the Shamans themselves also begin to wrangle in the tent. They wrangle and wrangle, each one holds himself for the better man. At last says one of the two, "There is a Shaman who can put the moon upon the flat of his hand." "That can no one do," said the other. "That can I do," says the former one. "Show us that thou canst do it," says the other one again. The Shaman places the moon upon the flat of his hand. There now lies the moon upon the flat of his hand, but in the tent it becomes cold, so cold, that the folk cannot shelter themselves. They make one fire after another, they clothe themselves in the *Maliza* and *Sazik*, but nevertheless they freeze. The less able Shaman then begs the cleverer one that he would place again the moon in the heaven. He does it. Once more the Shamans begin to wrangle. The less able wizard will yet always hold himself for as good a man as he who had charmed the moon into the flat of his hand, and placed it again in the heaven. The cleverer wizard speaks, "No one is a Shaman, who

cannot place the sun upon the flat of his hand." "And canst thou do that?" asks the other. "That I can," says the cleverer Shaman, and forthwith he places the sun upon the flat of his hand. But it becomes so hot there in the tent, that the folk must die of heat. The less able wizard begs the cleverer one that he would place the sun again in the heaven. The more powerful Shaman then puts the sun again in the heaven. Thereupon says he to the less able one, "Let us become geese, and so live for a time." Said, done. Both the Shamans became geese, and flew away, far away to Novaia Zemlia. Here each one built his tent; the cleverer one made his tent of cloth, the less able one out of reindeer skulls. The spring came, then speaks the less able wizard, "Let us gather together wives, as other geese do." "That is no good," answers the cleverer one, "for we collect mates, then we become bridegrooms, and we have youngsters, then men catch us. No, let us fly farther, for soon we lose our wings, and this place here is not very safe." So did they, flew away and came to a river, it was full of geese. The geese kept watch day and night. Each one must watch when the turn came to him. The turn came to one of the two Shamans, to him who had built himself a tent of reindeer skulls. As he stands upon the watch, comes a one-eyed Samoied to hunt. With him he has a dog, which runs upon three legs.

The dog chases the geese, chases and kill many. The Samoied follows after him and picks up the geese which the dog had killed before. The dog chases the geese still, he will lay hold of the less powerful Shaman, who had built himself a tent of reindeer skull. He bit him in the bill. The more powerful Shaman, who was in front, turns round and rescues his companion. Sometimes the dog grips the less able Shaman, then the more powerful one rescues him. The dog chased the geese ever and ever, farther and farther, the river becomes narrower and narrower, and at last so shallow that the geese can no longer dive. "We are lost," says the less abled Shaman, "what is to be done? Here we cannot dive, and if we go upon the ground, we cannot vie with the dog in running." The cleverer one says, "Let us try it; the land is not very big. We came soon to the sea, and there lies an island, thither will we straight direct our course." Then they began to run upon the ground, ran over the land, swam over the sea, and came to the island. Here the less powerful one began to eat grass, but the more able one no. The less powerful one spoke to the more powerful one, "Thou must eat grass, so that thy wings may grow, and we get away from here. Seest thou how big my wings have already grown, and thou art quite without any. Soon I fly away, and must leave thee here." So spake the less

able one, but the better man still went on eating moss. His wings wax not, but the less able one has full grown wings, and flies away. He flies to another island, and turns himself into a diver. There come some children, and strike him dead. When the less able one had flown away, the cleverer one began to eat grass, and his wings waxed straightway a fathom long. Then he flew away again to his native land, and began to live there as a man.*

* NOTE.—The above legends are translated from M. Alexander Castrén's "*Ethnologische Vorlesungen über Die Altaischen-Völker.*"





CHAPTER XL.

POLITICAL DIVISIONS AND GOVERNMENT.

SIBERIA experienced many administrative changes up to the year 1822, when it was permanently divided into two immense but unequal portions—Western and Eastern Siberia, both presided over by Governors-General, and each further divided into districts and provinces, ruled over by officers who receive all orders from their respective Governors-General, and can only apply to the Court of St. Petersburg through him.

Western Siberia consists of the governments of Tobolsk and Tomsk, and the province of Omsk. The mining district around Ekaterinburg belongs politically to the European government of Perm and Orenburg, although geographically it is a part of Asia. The capital is Tobolsk, where the Governor-General resides. Barnaul

and the Altaï Mountains with their rich yield of mineral wealth, is situated in the government of Tomsk, and belongs to this political division.

Eastern Siberia is three times as large as its sister government, and consists of the immense tract of country extending from the Yenisei, eastward to the Sea of Okhotsk, and the Pacific Ocean. Its capital is Irkutsk, on the east bank of the Lower Angara, a populous city of Siberia, containing 20,000 inhabitants. Here is the residence of the Governor-General of Oriental Siberia.

The population and area of the different governments and provinces is as follows :—

Governments.	Area, English square miles.		Population.
The Amoor District.....	173,552	...	44,400
Irkutsk	309,177	...	378,244
Maritime Region, or Littoral...	731,910	...	45,000
Tobolsk	531,959	...	1,086,848
Tomsk	329,024	...	838,756
Trans-Baïkal	240,770	...	430,780
Yakutsk.....	1,517,063	...	231,977
Yeniseisk	992,832	...	372,862
Siberia.....	4,826,287	...	3,428,867

It will be seen how thinly the population are dispersed

over this enormous tract of country. Many third class English towns contain more inhabitants than a Sibirian province, and our great metropolis in itself contains more souls than the entire length and breadth of Northern Asia!





CHAPTER XII.

TRADE AND MANUFACTURES.

REGARDED as a whole the manufactures of Siberia are unimportant, and many of them have sprung into existence during the present century only ; in stating which I must be understood as excepting the iron-foundries, which have been worked for the last two hundred years. I shall proceed to notice some of the most important productions, naming the towns at which they are fabricated.

At Neviansk, in the Ural, very good bar-iron is produced, which, when manufactured into domestic utensils, finds its way to every part of Siberia. Here also are turned out the clumsy but efficient rifles which I shall describe in another place. The cost price of one of these weapons is only a guinea and a half, and for accuracy they will bear comparison with the masterpieces of Westley Richards or Boss.

At Tagilsk both copper and iron works exist, and

from the latter, a magnetic ore, a large quantity of iron sheeting used in covering the roofs of houses, for stoves, &c., is prepared. The workmen here have acquired the art of lackerig iron with a composition capable of resisting the action of boiling water, and the designs wrought upon articles thus prepared are very artistic, and usually chosen from some important episode in the country's history. A school of design was founded here by Nikite Demidof. The iron ore of which this place is practically inexhaustible, is so thickly bedded in thickness by four hundred in length. At a short distance from this mass of metal lies the center mine, producing the malachite from which the vases and objects displayed at the Exhibition of 1851 were manufactured. A solid mass of this beautiful mineral, compared to weigh 720,000 lbs., was viewed at this spot by Sir Roderick Murchison.

The lapidaries of Ekaterinburg I have already mentioned, but may here state that many of the gems which pass through their hands are brought from Eastern Siberia. The beautiful and valuable Aquamarine, for instance, comes from Nertchinsk. In the Ural range, also, a very important mineral, plutina, is found, commonly in small grains, but sometimes in larger fragments. A mass weighing nearly ten pounds was once discovered. At one time it was minted, and formed

a very handsome coin. About 4,000 lbs. weight represents the annual production of this mineral. At Tchernostotchinsk—also in the Ural—is produced the “old sable iron,” so called from the bars being stamped with the figure of that animal, the ancient arms of Siberia. It is noted even in England for its good quality, and sells higher than any other Ural iron.

The government iron works at Barantchinsk turn out shot and shell, and at Kamensk ordnance of very heavy calibre is manufactured. Kaslinsk is famed for the beauty of its iron castings, even small articles such as card dishes, adorned with delicate open-work tracery, being readily produced, owing to the fluidity of the metal. At Zlataoust are fabricated immense numbers of sabre blades, daggers, &c., some of which are exquisitely damascened by a process discovered by the late General Anossof. Indeed the Russian workmen excel in the beauty of their iron manufactures, only a few of which I am able to mention here.

The abundance of nitre found on the Kirghiz steppes is utilised by the production of a coarse inferior gunpowder, which is used by the natives; and the manufacture of salt, an article of the highest importance, is conducted at Ust-Kutsk and Olekminsk, near the river Lena, as well as at Krasnoslobodsk and Koriakof. Salt-springs yield the useful mineral.

Paper mills exist at Omsk and at Tobolsk, where soap works are found at the latter place, and at Krasnoiarsk. Indeed both these towns are noted for their manufactures. Telma producing rough felt and linen woven from Yeniseisk hemp, and dark undyed cloth, spun from the wool of Burate sheep; whilst at Krasnoiarsk the tanning of leather is largely conducted, and a carriage manufactory established which turns out sleighs and droshkies of excellent finish and great strength. Even porcelain ware, on a small scale, is produced here. Tobolsk is famed for its leather, which many people assert to be equal in quality and endurance to the best Astrakan.

At Tiumen, and the villages in its vicinity, very strong and strong carpets are made by hand from goat's hair, and one of these articles can be found in nearly every peasant's house throughout the southern part of Western Siberia. Kansk is the head-quarters of the swan's down business, feather coverlets, &c., coming from there in considerable quantities.

Returning to the Ural, we find, on the banks of the Isset, quarries of porphyry, jasper, and agate, which are worked into stupendous columns by machinery of the most ingenious description; but perhaps the finest jasper is obtained from the Korgon gorge in the Altai Mountains. The labour required to cut out a solid column is

enormous, and the workmen have recourse to a very clever expedient which lightens their toil. Having selected the portion of jasper that they wish to separate, they proceed to drill holes a few inches apart, along the whole length of the block, to the depth required. When this operation is completed, they drive into the holes thoroughly dried birch-wood tree-nails, on which they then pour a quantity of water. This the thirsty wood soaks up, which causes it to swell, and the lateral strength thus exerted throughout the whole length of the line simultaneously, rives the stubborn rock from its bed, to be lowered down in triumph by its ingenious assailants. The jasper thus obtained is of a dark-green colour, and the enormous vases sometimes seen of this material are made at Kolyvan.

On the Vitim is found a mica quarry, of great importance locally, as the Siberians substitute this material for glass window-panes. On the Oka plumbago is worked, and is said to equal the best Cumberland black-lead. Near the spot stands a mountain of green talc, singularly beautiful in appearance; and lapis-lazuli is found in the neighbouring streams. A considerable trade in fossil ivory is conducted at Yakutsk.

On the great rivers ship and boat building is carried on in accordance with the demand, many of the large scows or barges being loosely constructed in order that

they may be taken to pieces at the terminus of the voyage. On Lake Baikal there is an Admiralty dockyard, and an important naval arsenal recently formed at Vladivostok on the shore of the Pacific.

The distillation of spirits is conducted by the government and by private individuals. The former pay an excise duty of some two shillings per gallon, as they are under the supervision of the authorities, rigorously exacted. Large quantities of spirits are imported from Western into Eastern Siberia, and at Lake Baikal, the latter province not producing spirits for its own consumption. The right of retailing this article is commonly farmed out by the government, the licensed dealers in most instances being Jews. Severe penalties are attached to the distribution of ardent spirits amongst the natives, but notwithstanding this prohibition an over-plentiful supply finds its way into their hands.

The acquisition of ports which can be entered at all times of the year on the south-east coast of Russia in Asia has already given an impetus to trade in that quarter, and the establishment of oceanic communication between Europe and the great rivers of the northern plain will doubtless tend to a further development of Siberian industry.



CHAPTER XIII.

RECENT EXPLORATIONS.

AT the time of the discovery of the American continent by Columbus, Russia—or, as it was then termed, Muscovy—was an inland country, with the exception only of a small portion of the coast of the White Sea. Reference to maps of that date will show that the whole of Northern Asia, now known as Siberia, was comprehended under the vague and general denomination of Tartary, of which little was known except from the remarks of Marco Polo, and a few other travellers, who, at the risk of their lives, had penetrated into that inhospitable region. So rapid have been the political changes in the last three centuries and a half that inland Muscovy has expanded into a huge empire, whose seaboard is greater than that of any other nation on the globe.

It will have been seen that the course of Russian conquest in Siberia was initiated by a roving Cossack chief,

and continued mainly by enterprising individuals of the same race, or by daring hunters and adventurers who made excursions for profit either by the chase, by barter with the natives, or by any unforeseen circumstance or chance threw in their way. Annexation may be said to have kept pace with discovery, for these adventurers were not overburdened with scruples, and, whenever powerful enough, forced the inhabitants of the country into which they thrust themselves to acknowledge the Russian Emperor, and to pay tribute either by manual labour or by an annual contribution of valuable furs, a tax known as the *yassak*. Thus the whole of Siberia was acquired by Russia through private enterprise, and at little or no expense.

In like manner we find that the principal discoveries in the Frozen Ocean, and the region adjacent thereto, were made by a class of men half hunters, half pedlars, whole filibusters, who organised small parties, and set forth into the wilderness, ready to take advantage of whatever might present itself. Such a business exists to the present hour in Siberia, and is a curious feature of society in that country. It is called the *prymyk*,* a word unknown in European Russia, and signifying every variety of inventive and active care for the future. An agriculturist does not come within the scope of the term,

* See p. 175.

but it applies to the professional hunter, or fisher, the searcher for mineral wealth, the pedlar, or any person, in fact, who gains a livelihood by keeping his eyes open and his wits about him. The members of society following this business are known as *Promyschleni*, and to their enterprise Russia is indebted for the speedy manner in which her power became recognised over half the Asiatic continent.

On the discovery of America it was at once assumed by Europeans that the new land was distinct from the Old World—Siberia was then unknown to them; but after several determined attempts—notably those of Wiloughby, Barentz, and others, to force a north-eastern passage to India, had failed, geographers changed their opinion, and suggested that probably the Old and the New World formed but one vast continent, no passage existing between them. To ascertain the truth of this was manifestly more important to Russia than to any other country, for a practicable navigation round her coasts from Europe to China would be of inestimable benefit from a commercial point of view; and, moreover, she possessed facilities to which no other nation had access, for the sea-board of the Frozen Ocean was hers, and she could recruit from amongst the subjected tribes men accustomed to travelling in that inhospitable region and inured to the severity of the climate. So as the

descendants of Vermae advanced onward they extended their researches in the direction of the Levant, and in 1636 we find that the Russians had begun establishments on the Lena, from whence they pursued their discoveries seaward. I may mention that constant and synchronous measures were adopted by them on the Amur.

To recount the various expeditions set on foot by Russians, whether *promyshlenni* or government officers, would be foreign to the object of this volume. Dejean's attempts to double the two northern capes were nearly, but we have no authentic record that the adventurers ever succeeded, although life was freely sacrificed in the effort. The discovery and conquest of Kamtchatka gave a new starting-point, and Behring, acting under special instructions from Peter the Great, sailed to the American coast and ascertained that the continents were separated by the strait that bears his name.

In 1764 a Russian sergeant stationed at the northernmost of the Medvedski Islands reported having seen land to seaward, but his account was discredited. Six years later, however, between the mouths of the Yana and the Indjirka, a group of islands were discovered by Lachof, an enterprising merchant, after whom they were named. One of these is New Siberia, and from the group is obtained a vast quantity of fossil mammoth

bones and ivory, an incredible number of which are imbedded in the layers of sand and ice. Even at the height of summer the snow remains on the ground, and not a single blade of grass enlivens the dreary desolate waste. In 1822 Wrangel discovered the land that bears his name.

Since then our knowledge of the bleak regions which form the border of the Icy Sea has been considerably increased by the land surveys of Hedenström, Ermann, Middendorf, and others, to whom all honour is due for their energy and perseverance in pursuit of scientific knowledge. But the information gained by these explorers gave little encouragement to such as still dreamt of a north-eastern passage to the Pacific Ocean. That the produce of Siberia might be safely and easily conveyed to Europe by means of her great rivers became the problem on which men now fixed their attention, and such details concerning this subject as may prove interesting I shall endeavour to lay before the reader.

A glance at the map will manifest that a vessel sailing from Europe to the Obi—I say the Obi as being the most western of the great Siberian rivers—has at her disposal four different approaches to her destination. She may sail to the northward of Novaia Zemlia, as did Barentz, and then drop down on her destination ; or she may pass through Matochkin Shar (Matthew Strait) in

lat. 73 N.; or keeping to the southward of Novaia Zemlia, she may enter the Kara Sea by Burroughs Strait; whilst, lastly, by closely hugging the land, she may pass between the island of Waigatz and the Siberian coast through a passage known as Pet or Jager Strait.

The first of these routes may be dismissed as utterly impracticable, and the second—between Northern and Southern Novaia Zemlia—has little to recommend it. In the summer of 1871 Von Heuglin started from Europe intending to survey the Kara Sea, to visit the mouth of the Obi and Yenisei, and, if possible, to extend the voyage as far as New Siberia. He elected the second route that I have mentioned, the Strait of Matckan, through which he passed on the 6th of August, up to which time no ice had been met with. But no sooner was the Kara Sea reached than drift ice barred the way, and he was compelled to return through Matckan Strait to the more open westerly sea. Pushing south along the western coast of Southern Novaia Zemlia, he visited Waigatz, and finally reached Pet Strait on the 1st of September; but on passing through the ice again confronted him, and fearing that his vessel might be shut up for the winter, Von Heuglin returned to Europe, having fixed with precision the geographical situation of certain places.

But it is less with exploring expeditions than with the

opening up of commercial relations by sea between Siberia and Europe that I have to deal with in this volume ; and amongst those who have sailed the Frozen Ocean with that intent two names stand pre-eminently forward—Captain Joseph Wiggins, and Professor Nordenskiöld. With our own enterprising countryman I shall deal first.

Some thirteen years ago M. Siderof, a Russian merchant on the Yenisei, offered a premium of £2,000 for any ship that could reach the mouth of that river, accompanied by a guarantee of £20 a ton for the freight that the vessel might carry. Siberia being, most unfortunately, a penal country, the Russian Government disapproved of the scheme, and it remained in abeyance until 1874, when Captain Wiggins, of Dundee, resolved on making an attempt to reach the mouths of the Obi or Yenisei.

His reasons for turning his attention to this quarter of the globe are succinctly stated by Captain Wiggins in a letter published in the *Geographical Magazine* for March, 1877. He says : “ For many years I have been impressed with the idea that commerce to an immense extent could be carried on between Siberia and Western Europe *via* the Kara Sea, and the mighty rivers Ob and Yenisei. These rivers penetrate some 2,500 miles into the heart of Siberia and to the confines of China ; a high-

road even to Japan could be opened by Lake Baikal, the rivers Selenga and Amur, where trade by water is already carried on to a large extent by Persians, by the Kara Sea route the mineral wealth of the vast Ural Mountains, the produce of the forests and agricultural districts of Central and Northern Siberia, together with the valuable furs and skins of Northern Siberia, could be turned into a continuous question, which is but some twelve days' journey from England, or similar to an Archangel voyage, there could not be the slightest doubt of the advantages of this route, and my idea was strengthened by the fact that three centuries ago such famous heroes and explorers as Sir Hugh Willoughby, Chancellor, and Pitt, and the Dutch Captain Barents, attempted to determine the problem of finding their way to Japan by the northern route inside the Kara Sea. At this period the Russians were, and had been for many years, engaged in an extensive trade from Archangel to the Ob and Yenisei to the Kara Sea. This was accomplished by wretched flat-bottomed boats, sewn together with willow twigs, called *boty*, and under these difficulties they skirted the southern or land or southern coast of the Kara Sea, passing round the Waygat and Pett Straits, thence crossing the Laptchev Gulf to the River Yurubei, proceeding up that river till they came to two lakes which were reported to reach

join the River Selenoi, which river was said to enter the Gulf of Ob near the Gulf of Taz, where a large town by the name of Mangasee existed. Occasionally these frail craft were known even to reach and ascend the Yenisei. What might not be done, therefore, with the improved steamers of the present day? They now annually do battle with the mighty ice of Davis Straits, Smith's Sound, &c., in comparative safety."

Such were Captain Wiggins' reasons, and with characteristic energy he proceeds to demolish all objections. That the ice in the Kara Sea would prove an insuperable barrier he thinks unlikely, owing to the warm waters of the Gulf Stream and equatorial currents, which would probably flow eastward through the Waigatz and Pet Straits, leaving the southern part of the Kara Sea clear for some months at least. Regarding the objections of the Russian Government he felt certain that they would be overcome when the commercial utility of the new route was clearly demonstrated. As to the prospects of trade, Captain Wiggins says: "I may state, for the benefit of those who may be sceptical as to the prospects of this 'mighty commerce,' that the fur trade is one which will vie with any other part of the world. Then the rivers are one living mass of fish; and the art of fishing in this quarter is not so secure as great a 'haul' at a time as possible, but rather how best to avoid this,

from the fact that one third of the net is lost annually by the heavy draughts of fishes. The fish are of the richest quality, and consist of sturgeon, beluga, pickerel, pike, perch, bream, a splendid quality of trout, and many other of the most valuable kinds, each known to me by their Russian names."

"Then there are other valuable commodities. The Ob, which skirts the eastern side of the Urals, is exceedingly rich in minerals, while the Yenisei has gold, silver, iron, and copper mines. There is also coal, and other minerals. The forests are immense, and there are immense tracts of agricultural land. The country is of extended commerce, could supply all Western Europe with wheat, linseed, oats, barley, and other crops. The basin of the Ob especially is of the richest soil, due to the fact of its overflowing its banks annually, and leaving a rich deposit in the same manner as the Nile."

Determined to test the correctness of this view, Captain Wiggins, in the summer of 1874, hired the Arctic steamer "Diana," and sailed from Dudinka on June 3rd. In little more than three weeks the Kara Sea was entered and found free of ice, the vessel floating comfortably along, in from ten to eleven fathoms of water, under sail alone--indeed since leaving Hammerfest recourse to steam had been unnecessary. The "Diana" stayed for several weeks in the neighborhood

of Lütke Island and Baidarata Gulf, Captain Wiggins and his party occasionally landing, and finding the earth one mass of green foliage and flowers, with shrubs bearing sweet berries of many kinds. Immense flocks of eider ducks and swans were seen on the small island lakes, but no snow, except on the distant peaks of the Ural Mountains.

During their stay here the ice was leaving the middle part of the Kara Sea, and on its departure the vessel stood northward, safely entering the Gulf of Obi on the 5th of August. Here they encountered strong head-gales and currents, and the "Diana" being slow of speed, and drawing a great depth of water, Captain Wiggins determined on abandoning any attempt to proceed up the river, influenced, doubtless, in making this decision by a promise that he had generously made to search for the Austrian Arctic Expedition.

So far the voyage was a complete success. Captain Wiggins had demonstrated that the dreaded Kara Sea was, at a certain season, free from ice, and capable of navigation, for the "Diana" had sailed it for two months, finding open water the whole distance between the Obi and the Yenisei.

Arriving at Dundee on the 26th of September, Captain Wiggins paid his crew off, and employed the winter months in making public, by lectures and otherwise, the

feasibility of the sea route to Siberia, and the great importance to commerce. Two Swedish gentlemen came forward with material aid in the equipment of a second expedition, for the gallant explorer's private resources were somewhat crippled, owing to the first voyage having been made entirely at his own expense.

Having purchased a small cutter, only forty-two feet in length!—Captain Wiggins sailed for the Kara Sea; but the weather was so violent, and a succession of north-easterly gales and heavy seas, compelled the explorer to bear up for home, so that he reached without further misadventure. The winter of the autumn of 1875, and in the summer of the next Professor Nordenskiöld, following the "Draught" track in 1874, succeeded in reaching the mouth of the Yenisei in a Norwegian sloop, ascending the river, and ascending himself overland to St. Petersburg, where he was met and returned by sea to Norway. Captain Wiggins was asked to join his brother explorer at the Russian court, where both gentlemen addressed crowded assemblies, who manifested a great desire for the continuation of investigations that must inevitably result in a new world being communicated to commerce. Many of the leading Siberian merchants and members of commercial societies offered handsome subscriptions towards the equipment of another expedition under the command of Captain

Wiggins, who was directed to return at once to England, and secure a steamer suitable to the work.

He says: "However, before this could be accomplished, jealousies had invaded the Societies, there being members averse to the 'foreign element,' and desirous that a Russian naval officer should head the expedition. This had the unfortunate effect of causing promised subscriptions to be withheld, M. Sibiriakof being the only gentleman who remained steadfast to his proposal. His money was placed in the hands of the editor of *The Times*. This, coupled with the assistance of Mr. Gardiner, enabled me once more to attempt demonstrating the feasibility of the route. I therefore purchased the screw-steamer 'Thames,' which vessel was strengthened and fitted for Arctic work, and although very inadequate, being of little power and not at all suitable for the undertaking, I managed to fit her out and provision her for about six months. With this vessel I succeeded in freely navigating the Kara Sea for some six weeks, surveying thoroughly the Baidarata Gulf, where I found a commodious harbour under an island on the west shore. I then proceeded to the Gulf of Ob, where heavy gales and strong currents again prevented me from ascending, my vessel having the same drawbacks as the 'Diana,' namely, slow of speed and great draught of water."

During his stay in the Kara Sea Captain Wiggins

occupied himself with the minute regulation of the temperatures, the result of which is highly interesting, as demonstrating that the Gulf Stream and other cold currents find their way into that sea, and that even in the dredge with great success. His discovery of the Gulf of Baidarata was also very effective, leading to the discovery of an excellent harbour between the mainland and an island on the west side of the gulf. To this gulf he gave the name of "Sibirsk'sk'skaya Bay," and to the anchorage "Gardiner's Haven." The result of this successful voyage I give in the explanation now.

"On September 2nd the vessel arrived on West Island,* the entrance of the Gulf of Olenyok proceeded there under canvas without the aid of steam, ice impeding my progress. However, heavy headgales prevented me from ascending this gulf, therefore I went up for the Yenisei, discovering on my route through many magnificent islands well clad with verdure and abounding with reindeer. Whilst among these islands I on one occasion took shelter for upward of five days, hurricanes of wind prevailing the whole time, the ship riding in perfect safety in the smoothest water. From thence I directed my course to the Yenisei, passing on my way magnificent islands containing natural harbours of the most extensive kind, and reindeer in large numbers were to be seen. On the shores of most of these islands

driftwood was piled up in monster heaps which contained trees of the largest dimensions, some of which would make masts for the largest of our men-of-war. Most of them were as sound as the day they were lodged there, owing to the preserving power of the climate ; and there is no doubt that most of these splendid spars have been lying there for centuries."

"A fine northerly gale soon brought us into the vicinity of the first village at the entrance of the Yenisei, which forms a well-sheltered natural harbour for vessels loading in the summer months. I landed here expecting to find records of the merchant Sideroff's vessel that was expected at the mouth of the river with plumbago. On reaching the village I found the few houses composing it roofless and deserted, and observed large troughs lying about, which evidently had been used in the preparation of seal and walrus oil obtained by Russian fishermen in times gone by. The boiling-house was in the rear of the building and the best preserved of all. Many foxes were wandering at their leisure on the beach. I should not omit to mention the difficulty we encountered in scaling these formidable barriers of driftwood to reach this village from the beach. Many of these great bulks of timber had never received the pressure of human feet for centuries, and on our stepping on to them several of them that were buried far below, being rotten, gave way,

precipitating the surface timber and the members of my party, who stood in great danger of being frozen alive. Finding no records, I advanced up the Yenisei and the first natives I had the pleasure of holding conversation with were found in the village of Svyetoye. Here a Russian and two Samoyedes came on board. I interrogated them as to their knowledge of the Swetlovoe navigation, which I expected had ascended as far as Kureika. They appeared entirely ignorant of any navigation having passed up. From here I crossed over to the village of Korepovskoye. The natives of this village informed me that Professor Nordenskiöld had not been there, but were teetering at the same time to pilot my vessel to the sea.

"After many days of hard labor to clear the channels, I was obliged to dispense with the assistance of this native, and then, by the aid of my steam launch, succeeded in finding the only channel in this locality, which was never less than some three fathoms deep, and not over half a mile in length. Once over this danger, I sailed with the greatest of ease to Dudinskoe, where the channel good all the way up, never having less than ten fathoms of water. Ascertaining that there was no other river of safety in connection with the Yenisei was at Kureika, and that by placing the vessel within the entrance of this small river she would be in perfect safety until the breaking up, and finally passing away of the ice

in the spring, I determined to take my vessel there, and succeeded in reaching the entrance of this river by the 17th of October, and having entered it as far as the water (which was very low) would permit, I succeeded in placing my vessel alongside the bank of the river, and the following two or three days served to fasten her in this position, the ice having formed. The crew having been comfortably housed on shore, and Captain Syanberg, who had been sent out to work the plumbago by M. Siderof, having joined me, we left the ship on the 24th of November, and proceeded in sledges to Turuchansk. Here the governor of the village, an over-officious official, committed himself by behaving in a most violent manner towards our party. He seized our sample goods, on the pretence that I had infringed the laws of Russia, by giving away on several occasions small articles as presents to those natives who had been so kind to me on my way up the Yenisei. This foolish man proceeded to such an unwarrantable extreme as to threaten Captain Syanberg with imprisonment, or to despatch us to Yeniseisk under an escort of soldiers. Ultimately he became convinced that he was acting improperly, changed his conduct, invited us to dinner, and finally did us the honour of escorting us himself to the next village."

"Our journey to Yeniseisk, a distance of 600 miles or more, was resumed. The scenery was occasionally grand

in the extreme, and at times we perceived the magnificent forests of immense trees, consisting of the birch, the plane, the cedar, &c. The weather was clear and beautiful, although intensely cold, the thermometer registering at times 40 below zero. Arriving at Yeniseisk by the middle of December, the Governor immediately despatched to England a telegram announcing our safe arrival. At this point the Governor, the mayor, merchants, and others all received me with the utmost kindness and hospitality. On no less than three occasions was I entertained at private *soirées*. The Governor General, who had been communicated with, sent orders for the release of the goods, *free of all duty*, which had been detained at Turuchansk, and finally another officer was despatched to relieve the before-mentioned one, and that district of his responsible duties, thus proving that the Russian Government do not wish in any way to impede commerce, but rather to facilitate it in every way. I also received from the Mayor of St. Petersburg a complimentary telegram, in the name of the Imperial Society of that city, congratulating me on my success.

By way of Krasnoiarsk, Tomsk, and Omsk, Captain Wiggins reached Tiumen, the principal city for commerce on the Obi. Here he found the spirit of progress and operation. On the river were steamers nearly 300 feet in length and of 300 horse-power, built and fitted in

good style ; and magnificent lighters of between 200 and 300 feet in length, and drawing only three feet of water when loaded, but capable of carrying 600 tons of cargo. On the last day of January, 1877, the successful explorer reached London.

Thus far I have followed and quoted from the letter addressed by Captain Wiggins to the *Geographical Magazine* (see *ante*), but for a description of the ultimate fate of the “Thames,” I have recourse to the highly interesting paper read by Mr. Henry Seebohm before the Royal Geographical Society on the 14th of January, 1878, and recorded in the “Proceedings” published by them. This gentleman, who had previously made an expedition to the valley of the Petchora, for the purpose of investigating the ornithology of that district, met Captain Wiggins at Sunderland, when he was on the eve of starting to rejoin his vessel, which the reader may remember had been laid up for the winter, the crew living in huts on shore, at the junction of the Kureika river—or, as Mr. Seebohm writes it, the Kurayeeka—with the Yenisei. Such an opportunity for an ardent ornithologist was not likely to occur again, so Mr. Seebohm made arrangements to accompany the explorer, and on the shortest notice the companions set forth, quitting London on the 1st of March, 1877, and proceeding by Nijni Novgorod, Tiumen, Omsk, Tomsk, and Krasnoïarsk to Yeniseisk, at which town the travellers stopped

for two or three days in order to visit the people residing there, and to make arrangements for the execution of their journey. Here Mr. S. engaged the services of a Jew to assist him in preparing a work in which the new hand became acquainted. On one occasion he skinned three birds, and at 8 A.M. and 10 o'clock on the following morning. From this point I follow the ornithologist's narrative.

The travellers proceeded in their sledge-journey down the frozen Yenisei, a gigantic river, which flows from Yeniseisk and Turokansk,* a distance of 1,000 miles, of windings, widens from one mile and a half to 10 miles; an enormous breadth, which continues the same for another 800 miles, when the delta commences, and the river expands to twenty miles in width. Mr. S. says: "Upon this enormous river, of course, in this place frozen over with ice, and then covered with snow, we proceeded along our sledge-journey, the banks being almost entirely covered with pine forests. In order to give you an idea of the size of these forests, I cannot do better than tell you of the extreme diameter of wood in Yeniseisk. You can buy a ship's mast, 60 feet long, 3 feet diameter at the base, and 18 inches at the apex, not made of soft wood but of hard larch, the sovereign; and if you want a hundred of such ships

* Turuchansk of Wiggins.

masts, you can have them delivered in a week. The whole district, from Yeniseisk to the River Kurayeeka, is one enormous forest, principally larch, but largely mixed with Scotch fir, birch, and a tree which they call cedar—a very fine, handsome tree, clothed with wide-spreading branches down to the roots, and bearing a nut which is consumed as a luxury, as we might eat filberts ; and such is the extravagance and waste of timber in this part of the country, that, instead of climbing the tree, which is, say, three feet in diameter, in order to gather the nuts, they simply cut it down, pick them off, and leave the trunk. The banks of the river are something like 100 feet in height, and every time we changed horses we had to ride up the steep bank, and, as we came down again, generally some eight or ten villagers were obliged to hang on to our sledge in order that we might preserve the perpendicular and arrive safely at the bottom. I can assure you that sometimes when we looked down the precipice which we had to descend, it almost made our hearts jump into our mouths ; but so careful were these peasants, that we never once had an accident on that account. We were upset scores of times on the river, and, in fact, on one occasion I got so tired of being turned out that I lashed myself to the side of the sledge. We arrived at Kurayeeka on the 23rd of April, having had a tolerably fair journey, except in one narrow pass

about a third of the way from Yeniseisk. At this place the river is much contracted, and the steep cliffs of limestone rocks upon either side make the current in consequence so swift, that the water in the middle of the river never freezes, even in the hardest winter. We arrived at the entrance to this pass late in the evening, and pouring deluge of rain. We had been travelling for the last night from Yeniseisk, having had during the day a head sort of race with the south wind, and had been completely beaten. We were told that there was no probability of going through the pass until the first of June. We went to bed thinking it might be a week before we could get until such an event occurred, and we were very anxious to have a night's rest. It was raining hard, and the strong south wind blowing. However, when we awoke in the morning we found the thermometer — on a scale of Fahrenheit — freezing-point and zero, probably nearer zero, with a strong wind, and all the snow drifting in clouds of white powder. We were very glad indeed to have our sledges packed up as early as possible, and to proceed through the pass. This was the last time that we had any opportunity of rain upon this journey. Shortly afterward the south wind left us, and we had either east or north wind, and we arrived at the Kurayeeka, to all appearance, in mid-winter. The Yenisei at this point is $3\frac{1}{2}$ miles broad, and the Kurayeeka about a mile wide. This was on the

23rd of April, and we found the ship frozen into the ice perhaps half a mile up the Kurayceeka. The crew were extremely well, and had passed through the ordeal of the winter very successfully. Captain Wiggins had provided them with ample allowances of lime-juice, which they had diligently drunk, and also with French dried vegetables ; he had also instructed the mate that every day some amount of exercise should be taken, and that through the winter they were to collect sufficient wood to burn during the voyage home. The result was that the sailors passed through the winter without the slightest trace of scurvy. Now I may tell you that a little lower down the Yenisei, among the Brekofsky Islands in the delta, another ship, belonging to a Russian merchant, spent the same winter. This ship also had a crew on board, but no lime-juice was provided nor dried vegetables, and the men, as Russians will do when they are not forced to work, simply lounged and slept the winter through. The consequence was that every man of them died of scurvy except the mate, who just succeeded in recovering. Whilst on the subject of scurvy, I may say that it is a very common disease amongst the Russians. They live in houses, and during the winter they are very lazy ; and although they make an abundance of cranberry and other kinds of preserves, they are so improvident that they eat it all up during the autumn and winter and have none

left in the spring. Now, the natives who live in this part of the country never have the least trace of scurvy. They are equally devoid of vegetable diet, and are as much exposed to the climate; they also have no lemon-juice. Their freedom from scurvy probably arises from their living in tents and having an abundance of fish, and moving about constantly on the chase. One other reason may be that they are very fond of eating the uncooked flesh of animals."

Mr. Seeborn's object, of course, was to give to the ornithology of the district, and by means of engravings he succeeded in moving over the surrounding country, and in identifying a few specimens, many of them water residents, others early summer visitants; but on the 1st of June summer arrived with a rush, and with it came a feathered host of various descriptions. I extract from the narrative the account of the sudden change of season and the consequences that ensued, Mr. Seeborn's description being too graphic to bear alteration or curtailment:—

"On June 1st we still had all the appearance of mid-winter. There was no sign whatever of the arrival of summer, except a few flocks of wild geese and wild swans, and we were beginning to feel that in all probability we should have an unusually late season, when, as we came out of the cabin of the ship, we were surprised

to observe a small range of mountains form upon the angle where the Yenisei and Kurayeeke join. These were a range of hills of ice, over 60 feet high, piled in the most wonderfully picturesque confusion. A portion of the frozen river, about a mile long and one-third of a mile wide, in consequence of the rapidity of the water underneath, had broken, and part of the ice had got into the narrow channel which was formed by the gradual rising of the river between the main body of ice and the shore. The other part had rushed headlong on the precipice at the confluence of the two rivers, and the result was the blocks of ice piled themselves one on the other until a complete range of mountains was formed—mountains as blue as cobalt, and in some places just like heaps of shivered glass. We immediately set off to visit this curious range. Many of the sailors began to get frightened, and began to get their goods and chattels out of the ship; however, we thought the wisest plan was not to take any steps at present, but simply to institute a watch, and we went to bed, with instructions that if anything extraordinary occurred we were to be awakened. About midnight the watch called us, when we found that the grand break-up of the ice had commenced—one of the most extraordinary scenes that it was ever my good fortune to witness—one of the most impressive that possibly could occur. The Yenisei was

rising so rapidly that it was beginning to flow up all its tributaries. Captain Wiggins had originally hoped to have taken his ship into a little creek opposite where she was anchored, but the snow had then melted so little and the river had risen so slightly, that the entrance was perfectly high and dry. The consequence of the sudden rise of the Yenisei was that when the ice began to move towards us, which it shortly did, it came on in the form of icebergs, piled five or six thicknesses of ice, one upon the top of another, and in large floes, at the rate of perhaps four or five, or even six miles an hour. Of course, such enormous blocks of ice were utterly irresistible, and the only thing to be done was to cut cable and to run into the stream. We were driven up the Kara-yeeka for perhaps the distance of two miles. Sometimes two large floes of ice would squeeze the vessel between them, and she would be lifted some feet out of the water. At other times a floe would try to crawl up the ship's side like a snake, and on many occasions she was crowded so near the shore that she grounded. One large block of ice carried our rudder completely away, and we never saw it again. During the course of that night things became so serious that we got our luggage conveyed over the ice on to the snow, and finally a large block of ice struck the ship with such force that a stream of water, as thick as my arm, came into the hold. We thought

the best thing to do was to desert the ship and leave her to her fate, and we all scrambled on to the banks of the river. However, just at that moment a temporary change took place. Some of the ice lower down the Yenisei must have given way, for the river sunk two or three feet, and the ice began to move down the Kurayeeeka, and in a short time we had perfectly clear water between us and the place where we were originally moored opposite the little creek, which was now full of water, and by guiding the ship with ropes we succeeded in getting her into the creek. There we ran her ashore, and she was afterwards repaired. For the space of a whole fortnight the mass of ice coming down the Yenisei was carried up the Kurayeeeka at the rate of six or seven miles an hour for four or five hours ; then marched back again, and so on until finally the Yenisei, three miles wide, rose seventy feet perpendicular in height. The end of it all was that enormous masses of ice which had gone up the Kurayeeeka further than where the banks were so high, spread out over the country, and were lost in the forest."

"During this time migratory birds were arriving in countless thousands. All this great event in nature was taking place to the accompaniment of screams of gulls, and divers, and swans ; all sorts of small birds were arriving, and, of course, my time was entirely occupied in shooting these birds, chronicling their time of arrival,

and making preparations for skinning, &c. As soon as the ice had dispersed, the steamers from Yeniseisk, belonging to the Russian merchants, came down loaded with all sorts of things; in fact, they were travelling shops. They proceeded as far north as Golubeck, which is a great fishing station near the mouth of the Yenisei. There they exchanged or sold to the natives various articles—flour, tea, coffee, sugar, gunpowder, and everything they could require—for furs and skins. In this region things are extremely cheap. You can buy dried fish almost for nothing; grouse at 7d. a lb.; excellent beef at about 2½d. a lb.; and a lot of other things at Krasnoyarsk, a ton of wheat at the same price as we give for one cwt. So extremely cheap are corn and hay on the great steppes between Tomsk and Tyumen, that we positively paid for the hire of our horses only 1d. per horse per English mile. I had bought a small ship, fifty-six feet long, in Yeniseisk, with instructions that she was to be sent down with the first steamer, and Captain Wiggins was to rig her for me, so that I might proceed further down the river in her, and meet the captain at Dudinka. In consequence of the disaster to Captain Wiggins' steamer this programme could not be carried out, and I was obliged to wait in the Kurayevka until he had completed her repairs and could go with me. Unfortunately he was unprovided with a pilot, and was

obliged to have recourse to the builder of my ship, who was tolerably well acquainted with that part of the river, and we proceeded early in July to go down as far as Dudinka; but we had not left the Kurayeeka more than 200 miles behind when another accident befell us. The ship ran on shore, and being unable to get her off again, we were obliged to leave her there a hopeless wreck. She was afterwards sold, and I and Captain Wiggins, with four of the crew, proceeded down as far as Dudinka in the vessel which I had purchased at Yeniseisk."

"At Dudinka the forest has become so small that it can hardly be called a forest—mere stunted trees—and shortly afterwards you pass the limit of forest growth, and enter upon what is called the 'Tundra'—a magnificent, wide, rolling-prairie country, full of swamps and bogs, lakes and rivers, every little valley a complete garden of the most brilliant wild flowers, swarming with birds by thousands and tens of thousands, enjoying during the summer season a perpetual day. But there is one great drawback to visiting this charming country, and that is probably the reason why it is so frequented by birds—the myriads of mosquitoes. Life without a veil, I believe, would be perfectly unendurable. I was obliged to wear thick leather gloves, and on many occasions, when shooting, if I was too long in taking aim, I had to shake the barrel to get the mosquitoes off, and then take another

aim quickly before they alighted again, otherwise I could not see the bird at all. At Golcheeka I made some interesting ornithological discoveries, but perhaps what will interest you still more is the fact that on the Lena, perhaps 500 feet above the level of the sea, and some three or four miles from the shore, I found large beds of sea-shells, showing that this country was formerly at a much lower level than at present. A little farther to the east is the great mammoth country. It is very certain that remains of mammoths are found on the Yenisei, but I was fortunate enough to pick up a fine mammoth tusk, which I exhibit here, and I saw many tusk-works which were brought down from the Katangar, a little to the east of the Yenisei, and which, if I had come home by sea, as I originally intended, I should have brought with me.

After selling his little ship, Mr. Seeböhm and Captain Wiggins returned to Europe overland, or rather by the magnificent river system that exists in Western Siberia. It will be seen that the gallant sailor had lost his vessel, but he had clearly demonstrated the possibility of ascending the Yenisei, and the admirable precaution that he took for the well-being of his snowed-up crew, shows a prudent foresight, and a regard for the comfort of others, creditable in the highest degree. May fortune be again in him should he undertake another venture!

The result of Mr. Seeböhm's journey was the col-

lection of a large number of costumes and other objects of ethnological interest, the skins of over 1,000 birds, half as many birds'-eggs, and a journal, the contents of which, let us hope, will some day be made public, for it must abound with interest to the naturalist and the general reader. Before, however, taking leave of this gentleman, I quote the opinion that he offers regarding our future ocean intercourse with Northern Asia. He says : " I have no doubt whatever that at some future period there will be an immense trade carried on with Siberia, through the Kara Sea ; but it must be organised on some systematic plan. It will never do to attempt to ascend the Yenisei in the same steamer as that in which the sea-passage is made. It is very easy to get up the river, when the stream is running three or four miles an hour against you ; if you happen to get on a sand-bank the stream will very soon get you off ; but the difficulty is to come down again with a falling river driving you on sand-banks ; and, as a matter of fact, there are no steamers drawing more than thirty-two inches of water employed on the river by the Russians, and I believe it is the greatest depth to which they can prudently go. The only way will be to have a depôt, not at Golcheeka, but at a point somewhere in that neighbourhood, where there must always be cargoes of wheat, hemp, flax, furs, or whatever else you wish to ship to England ; so that a steamer arriving from Eng-

land would have nothing to do but load and return. Two steamers have found their way there last season. One, the 'Frazier,' went to Golscheeka to take in a cargo of wheat. The weather was so bad that it was obliged to come home with a full cargo. The 'Louise,' went up as far as Tololsk, but I have not heard if it has got back again. The little steamer 'Globe,' at Golcheeka crossed the Kara Sea in 1874, completing the entire circuit of Norway and Sweden, and returning to St. Petersburg, being the first vessel lighted by the Arctic which had made the passage." Doubtless the Russian merchants will see the wisdom of following the sound and eminently practical advice.

I now turn to Professor Nordenkold, who, like me, with Captain Wiggins the honour of direct personal experience the practicability of an ocean trade between the great rivers of Northern Asia and Europe.

The successful circumnavigation of *Neven Zemli* by Captain Johannessen in 1871, a feat which earned him the gold medal of the Swedish Academy of Sciences, seems to have led Professor Nordenkold to consider the advantages that would arise by the opening of commercial intercourse with Siberia *via* the Kara Sea. Mr. Oscar Dickson of Gottenburg, convinced of the justice of the Professor's views, most generously fitted out an expedition, which he placed under the command of

that gentleman. The progress of this expedition I now propose to follow, my authorities being the letters addressed by the chief of the party to Mr. Dickson, and printed in *Nature* and other scientific periodicals. I believe that Professor Nordenskiöld has a book in the press giving a full account of his successful enterprises, but these sheets will be in the printer's hands before such a valuable source of information becomes public. I have, however, done my utmost to collect material from all accessible quarters, and, to avoid errors, shall, whenever practicable, quote the Professor's own words.

He writes from on board the "Pröven," at anchor off the mouth of the Yenisei, the letter being addressed to Mr. Dickson, and bearing date the 16th August, 1875. The letter appeared in the columns of the *Goteborgs Handels Tidning* of the 14th October, 1875, and the following extracts therefrom were printed in the number of *Nature* published October 28th, 1875:—

"We are now employed as busily as possible in equipping the boat in which I, accompanied by Dr. Stuxberg, docent Lundström, and three men, intend to sail up the Jenesej (Yenisei) with the view of returning to Europe across Siberia, while the other part of the expedition returns to Norway by sea, on board the 'Pröven.'"

"After the 'Pröven,' on the 8th of June, was towed

free of cost, out of Tromsø by a little steamer of the same name, we were compelled to lie at anchor in the sound between Carlsø and Reno for five days on account of a head wind. Finally, on the 14th, we could no longer weigh anchor and set to sea through Foulø Sandet. We therefore set our course past North Cape, where we passed on the 17th, to the southern part of Novaya Zemlya.

"During spring and early summer the west coast of this double island is, for some distance from the land, surrounded by a compact ice girdle, impassable at most places, which disappears later in the season, and in which, according to the experience of the fishermen, there are formed, generally at an early period, two sounds which are covered only with thin drift ice, and by which the ice-free belt of water along the coast is connected with the ice-free ocean westwards. One of these open channels is usually situated off Matotschkin Scharr, and its formation is caused by the strong currents which prevail in that sound; the other is to be found about the latitude of Severo Gusinnoi Mys, or North Goose Cape. The latter was chosen by me for the 'Proven,' and was passed without any special difficulty on the 22nd of June. The expedition thus, in seven days from its departure from Carlsö, cast anchor for the first time in Novaya Zemlya, in a little ill-protected bay immediately north of North Goose Cape."

Frequent soundings were taken, the ocean temperature tested, and dredging resorted to whenever an opportunity presented itself; and a strict examination was made of the coast, after which the "Pröven" entered the Kara Sea by Pet Strait, and found it to be *entirely free of ice*. The letter continues: "Our course was set towards the middle of the peninsula which separates the Sea of Kara from the Bay of Obi, and is named Jalmal by the Samoyedes. The wind was very moderate, so that we only advanced slowly—a circumstance by which our patience was in truth sorely tried, but which had this good result, that during our sailing forward in these waters, visited for the first time by a scientific expedition, we were able daily to undertake dredgings, hydrographic work, &c. The dredgings gave an unexpectedly rich and various harvest of marine animals, among which I will specially mention here several colossal species of *Iso-poda*, masses of *Amphipodo* and *Copepoda*, a large and beautiful *Alecto*, uncommonly large *Ophiuzids*, beautifully marked *Asterids*, innumerable mollusca, &c. The peculiar circumstance here occurs that the water at the surface of the sea, which, in consequence of the great rivers which debouch in these regions, is nearly free of salt, forms a deadly poison for the animals which live in the salt water at the bottom. Most of the animals brought up from the bottom accordingly die

if they are placed in water from the surface of the sea."

"Here, as on the west coast of Novaya Zemlya, were instituted, when opportunity offered, with the thermometers by Negretti and Zambra and Casella, procured by you during your stay in London last spring, determinations of the temperature of the sea, not only at the surface, but also at different depths under it. These investigations yielded a specially interesting result, and perhaps may be regarded as conclusive of a number of questions regarding which there has of late been much discussion concerning the ocean currents in these regions, the directions of which, in the absence of other data, it has been attempted to determine chiefly by the temperature of the surface water. By means of numerous observations along the west coast of Novaya Zemlya from Matotchkin Scharr to Jugor Sound, and thence past Cape Grebeni to $75\frac{1}{2}$ N. lat. and 82 E. long., and on to the mouth of Jenesej, I have obtained indisputable proof that in this sea the temperature of the sea-water at the surface is exceedingly variable and dependent upon the temperature of the air, upon the neighbourhood of ice, and upon the influx of warm fresh water from Obi and Jenesej, but that the temperature of the water at a depth of only ten fathoms is nearly quite constant, between -1 and 2 C. If, in the northern part of the Sea of Kara,

where the water on the surface is almost completely *free of salt*, and at this time of the year very warm, a flask filled with water from the surface is sunk to a depth of ten fathoms, the water freezes to ice. There are thus no warm ocean currents here at any considerable depth below the surface."

The reader will observe that this differs materially from the report made by Captain Wiggins, who states: "During my stay in the Kara Sea, both in 1874 and this last voyage (1876), I succeeded in thoroughly demonstrating the fact that the Gulf Stream and equatorial currents positively flow into this sea," and he proceeds to quote a number of temperatures in proof of this assertion.* Probably science will in course of time determine which of these practical men is in the right; perhaps both are correct, or, at least, we will rest content to think so until proof reaches us to the contrary.

Professor Nordenskiöld continues: "On the 8th of August we landed for a few hours on the north-western side of Jalmal, where an astronomical determination of the position of the place was made. Traces of men, some of whom had gone barefoot, and of Samoyede sledges, were visible on the beach. Close to the shore was found a sacrificial altar, consisting of about fifty skulls of the ice-bear, walrus, and reindeer bones, &c.,

* "The Geographical Magazine," Vol. IV. p. 57.

laid in a heap. In the middle of the heap of bones there stood, raised up, two idols, roughly hewn from drift-wood roots, newly besmeared in the eyes and mouth with blood, also two poles provided with hooks from which hung bones of the reindeer and bear. Close by was a fireplace and a heap of reindeer bones, the latter clearly a remnant of a sacrificial meal. After a stay here of several hours I sailed further north, until further advance in this direction was prevented by impassable masses of great even ice-fields at $73^{\circ} 30'$ N. lat. and $79^{\circ} 30'$ E. long. Afterwards I followed the edge of the ice eastwards, and finally steered our course towards the north side of the Jenesej, where the Swedish flag was hoisted and the anchor was let go on the 15th in the afternoon. We had now attained the goal which great seafaring nations had in vain striven for centuries to reach."

Professor Nordenskiöld sailed up the Yenisei in a Nordland boat, which he had provided for the purpose, leaving the "Pröven" to return to Norway, keeping, if possible, northward of the entire island of Novaia Zemlia. She left the mouth of the Yenisei on the 19th August, 1875, under the command of Dr. F. R. Kjellman; found the ice barring all passage northward, and, passing through Matochkin Shar, arrived safely at Tromsö on the 3rd October. With five companions Professor Nordenskiöld sailed in their boat up the Yenisei, and returned *vå*

Turukhansk and Yeniseisk to St. Petersburg, where, the reader may remember, Captain Wiggins was invited to join him.

In the following year—1876—each of these gentlemen sailed again for the Yenisei. How the Englishman successfully reached that river, and laid his vessel up for the winter, I have already recorded. Professor Norden skiöld's expedition—equipped by Messrs. Oscar Dickson and Sibiriakof—was divided into two parties, one proceeding by land, the other by sea, to the mouth of the Yenisei. The former travelled by Ekaterinburg, &c., to Yeniseisk, and then sailed down the river, sounding and making hydrographical surveys, and gathering the botanical and zoological information that I have recorded under the head of Fauna in an earlier part of this volume. The entire expedition was rather scientific than a commercial enterprise, although the “Ymer” took a small quantity of goods adapted to the Siberian trade, but rather as samples of Swedish manufactures than with the expectation of realising a profit.

I regret that space precludes me from entering at length into the details of this most successful voyage, which can be found in the columns of *Nature* for December 7th, 1876.* The “Ymer,” under the command of Professor Nordenskiöld himself, left Tromsø on

* “Nature,” Vol. XV. p. 123.

the 25th July, a seemingly late date, but up to that time the ice in the Kara Sea would have obstructed the navigation. The Yenisei was reached on the 15th August, and the "Ymer" steamed up it to Mesenkin, where they expected to find the land expedition under Dr. Théel awaiting their arrival. But they never turned up, although the Professor waited for them sixteen days, after which time delay would have been dangerous. This period was amply utilised by Nordenskiöld and his staff in making excursions about the neighbourhood and examining the tundras, of which he gives a most interesting account. He says: "Among the results of our search may be mentioned large pieces of mammoth hide, found along with some few pieces of bone, at the confluence of Mesenkin with the Jenissei; a skull of the musk ox, remarkable for its size, found together with mammoth bones in another tundra valley south of Orlovskej; a very rich collection of sub-fossil shells, found principally between Orlovskej and Gustinoj. In addition, various interesting observations concerning the geological formation of the tundra, &c., were made."

The "Ymer" made a safe return voyage and anchored at Hammerfest on the 18th September, having accomplished her task and returned to Norway in less than eight weeks. The prudence of this course has been since fully demonstrated by the destruction which overtook Captain Wiggins' vessel.

Dr. Nordenskiöld concludes his report to Mr. Dickson thus: "My stay at Hammerfest and Tromsö I turned to account in collecting information from the various walrus-hunters there about the state of the ice in the Arctic regions, and especially in the Kara Sea. I have succeeded in this way in bringing together very abundant materials for a solution, founded on actual observations, of the problem in navigation which lies before us here, and I shall by-and-by make a full statement of the conclusions at which I have thus arrived. Here I will only say that it is my conviction, which is also shared by the walrus-hunters whom I have consulted, that a regular sea-communication between Siberia and Northern Europe during a short season of the year ought not to be attended with greater risks and dangers than seamen encounter on many other waters now visited by thousands of vessels."

I have quoted the above because, although, as far as I know, Professor Nordenskiöld has not made public the information he then received, it must have been of a nature so encouraging as to give him the idea of performing the great achievement with which his name will ever be associated—the north-east passage between Europe and the Pacific Ocean.

In the year concerning which I am now writing (1876) a German expedition to Northern Siberia started under Messrs. Finsch, Brehm, and Zeil. They reached Ob-

dorsk, at the mouth of the Obi, and from thence travelled towards the Bay of Kara, to determine the possibility of uniting the basins of the Sea of Kara and of the Obi by a canal communication between the Poderata River, which flows into the Northern Sea, and the Chuchya, a tributary of the Obi. When they reached the latter river in July it was broad and deep ; on encountering it again early in the following month it had shrunk to the dimensions of a mere mountain stream. Dr. Finsch holds that any idea of a canal must be abandoned as impracticable, owing to the frozen ground, on which a high atmospheric temperature does not appear to have the slightest effect.

I now come to the last and greatest chapter in the history of north-eastern exploration. We have seen the possibility of water communication between Europe and the great Siberian rivers established, for, at all events, a few weeks in the year ; a brief space, it is true, but in these days of steam power and mechanical contrivances, a whole fleet could push to its destination by means of the former, discharge and load up with grain by means of the latter, and escaping into the open sea, could laugh to scorn the futile efforts of the Frost King, in whose harness a steamer can find a score of unprotected joints. This much both our own countryman, Wiggins, and Professor Nordenskiöld have shown ; it has remained

with the gallant Scandinavian, however, to conduct a vessel from Europe round the northern extremity of Asia, and to double the dreaded Cape Chelyuskin, that has baffled the most intrepid mariners since the days of Stephen Burrough, three hundred and twenty-two long years ago. The reader will kindly bear in mind that at the moment I pen these words, on almost the last day of 1878, our knowledge of the above great feat rests solely on the despatch forwarded by the explorer himself from the bosom of that unsailed Arctic Ocean—a letter addressed to Mr. Oscar Dickson, to whose munificence the expedition mainly owed its origin. This document is of amply sufficient interest to warrant my presenting it in these pages as it was traced by its author.

The expedition under Professor Nordenskiöld, which had for its principal aim the realisation of a “North-East Passage,” left Gothenburg in July, 1878, in the steamer “Vega,” accompanied by a smaller vessel, the “Lena.” The latter steamer belonged to M. Sibiriakof, and was to proceed up the river whose name she bore, and then discharge the merchandise with which her owner had laden her. The “Frazer” and “Express,” mentioned in the Professor’s letter, had for their destination the river Yenisei.

“On board the ‘Vega,’ east of Cape Tscheljuskin, the 20th August, 1878:—

“Much esteemed Sir,—We have just lately doubled Cape Tscheljuskin. To all appearances, it is not likely that ice will prevent the continuation of our voyage, as far at least as to the mouth of the Lena. The ‘Vega’ will there separate from her hitherto so faithful companion, the steamer ‘Lena,’ which proceeds up the river to the town of Jakutsk. There is consequently every probability that in a few days I shall be able to send you, *via* Jakutsk and Irkutsk, the account of our journey hither from Dickson Harbour, which I am now commencing to put into shape. I am very pleased to be in a position to start with the announcement—‘All well on board, and everything as promising as possible.’

“On the morning of the 9th, the steamship ‘Fraser’ and the steamship ‘Express’ took their departure for the Samoyede villages, somewhat farther up the river. I allowed the ‘Vega,’ however, to remain in Dickson Harbour for another day, so as to afford Lieutenant Bove the opportunity of finishing his stereographic notes of this naturally so well-provided place for an anchorage. As it is sheltered in every direction, I expect it will in the future become an important haven for these regions. It was, therefore, not until the morning of the 10th August that the ‘Vega’ and the ‘Lena’ weighed anchor for continuing their passage. We made for the most westerly of the Kamenni Islands, situated off the Frith of the

Pajsina. The day was cloudy. The temperature of the air showed as much as 10 deg. 4 centigrade above zero (equal to 50·72 degrees Fahrenheit); that of the water at first 10 deg. C. above, later on 8 deg. C. above—it being only slightly salt. No ice came into sight that day. There was a good breeze blowing from south-east, and the 'Vega' set off at full sail. Later in the day, however, it became foggy, and we were obliged to advance very carefully, especially as we had during the day passed several small islands which were not marked on the chart.

"The early part of the next day also proved very favourable, and no ice was anywhere discernible. But in a few hours the fog came on again, and this time so densely that we were necessitated to anchor for several hours off one of the numerous small islands which we encountered on our way. On landing here we found the island to consist of a low granite slope, very sparingly covered with mould, some parts of which were quite barren, and others only adorned with a very scanty vegetation of crippled mosses and phanerogams. The damp weather which prevails in these regions during the summer months had, on the other hand, produced an abundant growth of lavæ on the stones and mountain slopes, from which Dr. Almqvist was able to gather a rich harvest.

"The ocean water was only slightly salt, at least at the surface, and there were, therefore, scarcely any sea algæ

to be found ; whereas our zoologists with the dredge succeeded in securing a not inconsiderable booty of submarine animal forms.

“In the afternoon (the 11th of August) it cleared up and we were able to continue our course. A few pieces of ice were now visible here and there, and during the night their number increased so as to cause us at first some little anxiety ; however, they did not prove sufficient to form any impediment to our advance, but served, on the contrary, to entirely calm down the sea, a circumstance very favourable for our examinations of the temperature of the water at different depths, and for the dredgings, which are performed regularly twice a day from alongside the ship.

“The ice consisted almost exclusively of bay-ice, very thin and shattered, and it was evident that it would totally disappear in a few days. In spite of the thick fogs which came on from time to time, and made it necessary for the vessels to resort to the fog horns for ascertaining each other's whereabouts, we still continued our course towards the north-east on an unknown way, where islands were freely met with, and where submarine reefs were probably not excluded. At times when the fog became too dense we fastened on to some large ice-flake, or laid to alongside some of the isles, which occur in continuous groups along the coast from Dick-

son Harbour to Cape Tscheljuskin. That we did not during this stage of our cruise go aground even a single time may be cited as a fine proof of the efficient manner in which the duty of the navigation of the vessel was discharged by Lieutenant Palander and the assistant officers—Lieutenants Brusewitz and Hovgaard—working under his experienced guidance.

“By degrees the water became now more and more salt, and its temperature lower. Simultaneously, the organic life at the bottom of the sea showed itself in greater abundance. During the night, between the 13th and 14th August, whilst the vessel was made fast to a great ice-flake, Dr. Strusberg made some profitable dredgings, and brought to the surface not a few fine and pure forms of submarine life, *e.g.*, some large specimens of the extraordinary Crinoide *Alecto Eschrichtii*, several kinds of starfish (as *Asterias Linckii* and *panopla*), Pycnogonids, &c. Also Dr. Kjellman's trials with the dredge nearer land now brought him in some large sorts of sea algæ. On the other hand, the higher animal and vegetable life on land still continued very poor, so that, in comparison with the rocky shores of Spitzbergen and the western parts of Nova Zembla, this coast may be termed a perfect desert. Auks, razorbills, puffins, guillemots, and terns, which meet you in thousands upon thousands at Spitzbergen, do not occur here

at all. Gulls and skuas (*Icthyophaga*), which there enliven the air with their incessant pipings and noisy shrieks in fighting for their food, are here only very sparingly represented, each by two species, and it seems as if they were here less disposed to quarrel with each other. The only birds which are met with in anything like numbers are snow buntings, six or seven kinds of waders, and a few species of geese. Add to this one species of ptarmigan, the snowy owl (*Nyctaleus nyctaleus*), and one sort of falcon, and the bird-fauna of these parts of the Frigid Zone is enumerated, as far, at least, as we have had the opportunity to investigate it. Of hot-blooded animals in the adjacent sea we only met with two walrus, some bearded seals (*Phoca barbata*), and a herd of the rough seal (*Phoca hispida*). Fish is probably very abundant here.

“Before going further, I feel bound to relate the finding of a very curious object. Whilst the vessel was lying secured along one of the few ice-blocks that we came across of sufficient size and strength to carry half-a-score of men, I and Lieutenant Nordqvist stepped down on the ice in order to ascertain whether we might not also here find some of that remarkable stuff of cosmical origin which I discovered in 1872 on the ice off the north coast of Spitzbergen. However, I could not find here anything similar. But Lieutenant Nordqvist drew my attention instead to some yellow spots on the

snow, which I, thinking that they originated from slime of some diatomaceæ, asked him to collect and give for examination to any of the botanists of the expedition. At this subsequent examination it was found to be not an organic matter, but a kind of thick-grained gravel in finely shaped crystals of up to even a few millimetres in diameter. I have not myself had time and opportunity of scrutinising it more closely, but as an experienced mineralogist I am able to see that there is in this case not a question of any ordinary terrestrial mineral, though it may possibly prove some kind of matter that the strong winter cold has crystallised out from the sea water.

“From the 14th to the 18th August we were, while awaiting clear weather, riding at anchor in an excellent harbour-like roadstead, situated between the Taimyr Island and the continent. To this place I gave the name of Actinia Harbour, in consequence of the great number of actinia which the dredge brought up from the bottom here.

“The country round was devoid of snow, and adorned with a grey-greenish vegetable covering, consisting of a closely-set mixture of grasses, mosses, and lavæ. The number of species of phanerogams was extremely small; the vegetation of mosses—and particularly that of lavæ—was, instead, sufficiently plentiful. The whole formed, apparently, a much better grazing field for reindeer than

what is to be found in the valleys of Belsound, Ice-fjord, or Stor-fjord, in Spitzbergen, where these animals abound. Though these regions are sure not to have been visited by any Russian whalers for the last century, still we met with but few reindeer, and these, to our regret, were so timorous as to frustrate the energies of our shots. Captain Johannesen attributed this circumstance, and it appears with reason, to the fact of the presence of wolves in the neighbourhood. He related having observed traces of wolves, and a recently killed reindeer.

“Lieutenant Palander, accompanied by Lieutenant Hovgaard, made some excursions in the steam launch for the purpose of examining the strait which separates the Taimyr Island from the continent. This strait was found too shallow and unsafe, and the current, running in a westerly direction, too strong to admit of the ‘Vega’ passing this way to the Taimyr Bay. In case it may prove impossible to establish a post of observation at Cape Tscheljuskin itself, I can recommend Actinia Harbour as a suitable place as a station for the meteorological observations, which, according to the Weyprecht plan, should be instituted simultaneously at many different spots in the high north. That port is, as I have mentioned, sheltered on all sides, and the roadstead there is good.

“In spite of the still prevailing mist the ‘Vega’ and ‘Lena’ weighed anchor again on the 18th to continue the journey towards Cape ‘Tscheljuskin. Our later experience of the weather of these parts of the world has proved that we did right in advancing ; had we waited for clear weather we should probably have had to remain there until the sea had again put on its ice-cover.

“We steamed on along the western shore of the Taimyr Island. The Taimyr is surrounded with numerous isles which are not marked on the map, and may perhaps itself be cut up into parts by some sounds. I may add that the northern point of it does not appear to extend so far north as the maps show.

“We met no ice, except a little bay-ice, which was in such a state of dissolution that we were unable to detect amongst it a single piece apparently strong enough to hold a couple of men. This ice would very soon no longer exist. The Taimyr Bay was nearly free from ice ; in passing we even experienced a slight sea.

“The 19th August we continued our course along the coast of the ‘Tscheljuskin peninsula. The fog still kept very thick, at times only clearing up enough to enable us to discern the contour of the coast. In the course of the day we steamed past a considerable extent of unbroken ice, covering one of the bays on the western side of the ‘Tscheljuskin peninsula. The *fata morgana* pro-

duced by the sunbeams breaking through the mist at the horizon made the ice at first appear thick, but on approaching its edge we became aware that this firm ice was just as shattered as that of the floes we had passed out at sea.

“The mist prevented us seeing far, and I now commenced to apprehend that Asia’s most northern promontory might be so ice-bound as to make it impracticable for us to land. However, we soon descried in a north-easterly direction a promontory entirely free from ice. A small bay opened up here into the country from the north and was at the time also clear of ice. In this creek we dropped anchor at six o’clock in the afternoon of the 19th August, with flags flying and salutes thundering from the small cannon brought on board the ‘Vega.’ We had gained one object of our journey’s aim—the reaching of the most northern point of the old world.

“The air had cleared, and the sun shone brightly on the snow-unencumbered promontory before us. Like on our arrival at Jenesej in 1875, we were here also met by a big Polar bear. We had noticed its presence even before we anchored. It was strolling up and down on the shore, now and then raising its head in the direction of the ships in a manner denoting its endeavour to ascertain what unbidden guests had come to encroach upon a region where ursus had hitherto wielded an undisputed

sway. Frightened, however, by the salute, he ran off rather quickly, and consequently evaded a greeting from our rifles.

“For the purpose of astronomically fixing the geographical position of this important spot, and also in order to give the zoologists and botanists an opportunity of making some excursions, I remained here until the following mid-day.

“Cape Tscheljuskin is formed by a long promontory, cut in two by the creek in which the vessels had dropped anchor. A mountain range, the sides of which are slowly slanting, runs from the east shore parallel with the coast towards the south. According to the approximate calculations of our astronomical observations, and the quadrant measurements which were made, the western promontory is situated 77 deg. 36 min. 37. sec. N. lat., and 103 deg. 25 min. long. E. of Greenwich, and the eastern somewhat more to the north—namely, 77 deg. 41 min. lat., and 104 deg. 1 min. long. Some distance inland the mountains seemed to reach a height of 1,000 feet. This mountain ridge, as well as the surrounding plains, was nearly free from snow. Some masses of white snow were only visible here and there in the cavities of the mountain slopes and in some deep narrow holes of the plains. In most places along the shore there was still a strip of ice left.

“The ground in the plains consisted of a clayish mould, partly barren and broken up into more or less regularly-shaped sexangulars, partly covered with a similar verdure of grasses, mosses, and lava as we had met with at the places where we landed during the previous days. The mineral here, however, was not granite, but perpendicularly-placed layers of slate, devoid of any petrifying influences, and containing an abundance of crystallised sulphite of iron. At the extreme end of the promontory the slate strata were run through by mighty beds of quartz. Of phanerogams Dr. Kjellman was only able to discover here twenty-four species, most of them distinguished by a remarkable tendency for forming into a kind of close semicircular tufts. Dr. Almqvist also found the lava-vegetation of great sameness of shape, though exuberantly developed. It looked just as if the vegetable life of the Tscheljuskin peninsula had attempted an advance towards the north, and on encountering the sea had pitched at this extreme point of the land boundaries. Here were concentrated in a small space representatives of almost every one of the species of the vegetable kingdom that this region contained, many of which species you might have looked for in vain farther down in the plains.

“The animal life on land vied with the higher vegetable life in poverty. Of birds there were only visible

some quantity of snipes, a few species of the tringa family, a northern diver, a rather numerous flock of Brent geese (*Auser bernida*), and some few eider-ducks; we also noticed some remains from a snowy owl. In the sea around, which was now free from ice, with the exception of a few pieces floating about here and there, we observed a solitary walrus, two shoals of the Arctic dolphin (*Delphinopterus leucas*), and a small number of the bristled seal (*Phoca hispida*); consequently also here was a conspicuous scarcity of hot-blooded animals. The dredge, on the contrary, brought us from the bottom of the sea several large algæ (as *Laminaria agardhi*, &c.) and a heap of the lower classes of marine animals. Among these latter were some very large specimens of *idothea entomon*, a sort of isopod that occurs also in the Baltic and some of our (Swedish) larger lakes—a circumstance which is considered as a proof of the existence of a connection between these last-named waters and the Arctic Ocean during the time of the ice season. This collection of algæ was moreover of interest in so far as it afforded further evidence against the erroneous opinion which has prevailed so long—namely, that the Siberian part of the Frozen Ocean is totally destitute of algæ of the higher order.

“Whilst sailing between Cape Tscheljuskin and Olonek, the 21st—26th August.

“When the ‘Vega’ weighed anchor at noon on the 20th August, the sea surrounding Asia’s northern promontory was free enough from ice to lead me to expect that we should have a clear course not merely along the coast, which already at a short distance on the other side of Cape Tscheljuskin bends towards the south, but also eastwards as far as the New Siberia islands. It was, therefore, decided to make the course straight E. to S.—a decision to some extent influenced by the hope that we might in that direction meet with a westerly continuation of these last-mentioned islands.

“On the 20th and 21st we steamed on in the mentioned direction among drifting ice-flakes, as yet very much scattered and far between, but of a greater size and thickness than those we had previously encountered on this passage. The difficulty of navigating the vessels was unfortunately increased by a dense mist, which prevented us from seeing any of the surrounding pieces, or floes, of ice but those in our most immediate neighbourhood. It was therefore an impossibility to ascertain the position and extent of the ice.

“After having during the night of the 21st passed through a tolerably close field of ice, we were in the early part of the 22nd unable to proceed any further in the easterly direction. We therefore changed our course more towards the south; but it soon appeared that the

sea also in that direction was very much blocked up—as far, at least, as we could judge through the mist—and at mid-day we laid-to alongside one of the larger ice-flakes. At a distance it appeared of good thickness and strength ; but when we, later on, lowered ourselves down on it, it turned out to be in so frail a condition that it would evidently very soon melt away. As it cleared up to some extent we steamed on, though in a very short time we were again compelled to resort to the ice-anchors for making fast to another ice floe. By going further on in the mist we would have run the risk of getting entangled in the ice labyrinth before us, and thus exposed the Swedish Expedition to the chances of a similar fate to that which befell the Austro-Hungarian Expedition six years before.

“The early morn of the 23rd set in with a somewhat brighter phase. We cast off the ice anchors and steamed away through the ice masses in search of open water. Though the floes which now surrounded us were in such a condition as to clearly indicate that we could not be far from the edge of their extent, the fog, which soon came on again, made it impossible for us to discover any practicable passage either towards the east or the south.

“The safest manner to escape out of these ice masses was consequently to try in a northerly and north-westerly direction to reach the opening through which we had

entered. Nearly the whole of the next twenty-four hours was spent in effecting this, and it was not until half-past six in the afternoon of the 23rd that we again found ourselves in open water.

“The depth, which during our rambles amongst the ice had varied from 33 to 35 fathoms (one Swedish fathom is equal to 0.974 English fathom), now began to decrease, which indicated a proximity of land. This we came in sight of at 8.45 P.M. It was the north-eastern point of the Oriental Taimyr Peninsula, situated at about 76°30' N. lat. and 113° E. long. The sea outside, at a distance of 15 to 16 min. was entirely free from ice. Six minutes from the shore the depth varied from 6 to 12 fathoms.

“The air had brightened. A north-westerly breeze carried the vessels swiftly along, without the assistance of steam, over a perfectly smooth expanse. A little distance on the ridge along the beach became higher and cut up in those peculiar pyramid-like cones which characterise the eastern shore of the Jenesej, between Mesenkin and Sakovieva. Four mountains, at least 2,000 to 3,300 feet high, were visible some distance inland. They were free from snow, even on their very summits, with the exception of a few icy heaps of inconsiderable extent which had gathered in some of the cavities. There were apparently a few unimportant

glaciers, which, however, finished already at a height of, according to my estimation, 800 to 1,000 feet above the level of the sea.

“The animal kingdom now became very numerously represented. Already, while we were riding alongside the last-mentioned ice flake, Dr. Strusberg had with the trawl net brought up from the bottom of the sea, at a depth of 35 fathoms, an unexpected multitude of splendid submarine animal varieties. Among these were three specimens of a kind of crinoidea fastened on to a stalk, being, probably, young individuals of *Alecto Eschrichtii*, full-grown specimens of which occurred in overwhelming numbers. The multifarious booty further comprised several sorts of star fishes (e.g., *Solaster papposus*, *endeca*, *furcifer*, *pteraster militaris*, *asterophyton encuemis*), not a few of the otherwise so rare *Molpadia borealis*, two black fishes, and a gigantic pycnogonid of 180 millimetres in diameter, &c. The lower order of marine animals in the more shallow places was equally abundant in number, though differing somewhat in form.

“The animals here are evidently all of forms purely characteristic to the Arctic Ocean, without any intermixture whatever of emigrants from southern seas, as is undoubtedly the case with the Spitzbergen fauna. These collections ought, therefore, to become of great scientific interest in respect to the investigations which have for so

long been prosecuted by the naturalists of the north regarding the glacial animal forms—living as well as fossil—which have been met with on our coasts, and which investigations concern questions of great importance for the knowledge of the last era of the world's history.

“It now often became impossible to discern from the vessel even a trace of ice. Like we had previously encountered land far out where the maps denote sea, we were now, as you will find from the accompanying chart, sailing across regions marked on the maps as *terra firma*.

“At eleven o'clock A.M. on the 24th we descried ‘land ahead to larboard.’ It was evidently the island which on the maps is marked at the mouth of the Chatanga under the name of Preobraschenski. In reality, however, it is situated four degrees longitude—*i.e.*, more than ten Swedish miles (the Swedish mile is equal to about 6.64 English statute miles) further towards the east than indicated on the charts.

“As we approached nearer we found the island to consist of horizontal layers precipitously finished, which gave me the hope of finding there some petrifications. Partly in consequence of this, and partly in order to give Drs. Kjellman and Almqvist an opportunity of making a land excursion in these parts, as yet unvisited by men of science, I permitted the vessels to cast anchor here for a few hours.

“The precipitous shore at the north-eastern side of the island, which, according to Lieutenant Nordqvist’s measurements, amounts to a height of three hundred feet, was the resort of innumerable individuals of the Alca genus and kittiwakes (*Larus tridactylus*). Whilst letting out the anchor we observed on the shore two Polar bears, both of which were soon after shot, the one by Lieutenant Brusewit, the other by Captain Johannesen. The grass-covered slopes at the southern side of the island were besprinkled with a pretty abundant vegetation of great special variety, and, therefore, left our botanists a very good harvest. Besides auks and kittiwakes we came across here not a few snowy-owls, Iceland gulls, and guillemots. Of insects were collected one kind of *Staphylinus*, three specimens of a sort of *Chrysomela*, as well as a few individuals of the *Diptera*, *Podua*, and *Arachida* classes. On the other hand, my expectations of making a good gathering of petrifications in the calcareous layers were sorely discomfited. The result of my search was the finding of a solitary Belemnite, indicating that the island consists of a kind of secondary strata, similar to those which occur so extensively in the plains of North-western Siberia.

“Anxious to continue our voyage we weighed anchor at ten o’clock P.M. We are now between the 73 and 74 degs. N. lat., and the nights are getting dark. This

compels Lieutenant Palander to navigate with great care, particularly as the correctness of the chart here is doubtful, and as the sea, during the last part of our journey up to the mouth of the Lena, has in most places only measured a depth of from five to eight fathoms. Since the evening of the 23rd we have, however, been favoured with magnificent weather and a sea perfectly clear of ice.

“To judge from our experience during these last days the northern coast of Siberia does not, at the latter end of the summer season, appear to be any more troubled with ice than is, *e.g.*, the White Sea in the height of summer. The cause of this, as I have already pointed out in the programme for the expedition, is to be looked for in the masses of warm water which the large Siberian rivers let flow into the sea during the summer. The hydrographical investigations made in the course of the voyage will be found to throw further light upon these circumstances.

“Independently of the notes relative to the temperature of the sea-water at the surface, which are made in conjunction with those of our ordinary meteorological observations—say, regularly every fourth hour—we have two or three times a day examined its temperature and saltness at various depths. At these experiments, effected mostly by Lieutenants Palander and Bov, Professor

Ekman's heat-isolating apparatus has been used in bringing up the water. This apparatus works very well, at least at the small depths at which we have had an opportunity of testing it. The results are as follows :—Where the depth amounts to not less than thirty metres the temperature at the bottom of the sea varies from 1·0 deg. to 1·4 deg. Cent. below zero. The weight of the water there is 1·026 to 1·027, corresponding to a saltness scarcely less than that of the water of the Atlantic Ocean. At the surface, on the contrary, the temperature has varied to a considerable extent. For example, it showed at Dickson Harbour + 10 deg. Cent.; somewhat south of the Taimyr Strait, + 5·4 deg.; amongst the drifting ice just outside the above-mentioned Strait, + 0·8 deg.; off the Taimyr Bay, + 3·0 deg.; at Cape Tscheljuskin, 0·1 deg.; off the Chatanga Bay, + 4·0 deg.; and + 1·2 deg. to + 5·8 deg. between the Chatanga and Lena. The weights of the surface water—taken in a broad passage near the coast—have during this time never exceeded 1·023, and mostly not amounted to more than 1·01 or less. The last-stated number corresponds to a mixture of one part of ocean water to two parts of river water. These figures prove undeniably that a hot and only slightly salt surface-current, emanating from the mouths of the Ob and the Jenisej, is proceeding at first along the coast towards north-east, and afterwards,

through the influence of the rotation of the earth, in an easterly direction. Other similar currents are generated by the Chatanga, Anabar, Olonek, Lena, Jana, Indigirka, and Kolyma, all of which empty their waters (more or less hot from the great heat of the Siberian summer) into the Arctic Ocean. The coasts of this ocean are hereby rendered almost free from ice during a short time of the year. My impression of this state of things—and which caused me to propose the present expedition—has consequently proved correct.

“Up to this time everything has gone according to our calculations. May also our further expectations be fulfilled, so that I can already this autumn have the pleasure of sending telegraphic news to my native country from some port or other on the coast of the Pacific.

“All the members of the expedition are animated with a true sense of our great aim, and are, each in his degree, exercising their endeavours to secure its realisation.

“With respect, gratefully yours,

“A. E. NORDENSKIÖLD.

“P.S.—12 deg. north of the mouth of the Lena, the 27th August, 1878.

“My intention was originally to have cast anchor at the mouth of the Lena. But a favourable wind and a

sea free from ice are here offering so magnificent an opportunity to continue the voyage that I do not feel myself justified to neglect it. We are, therefore, now in the night between the 27th and 28th separating from the steamer 'Lena,' with the view of sailing from here direct to the Fadejew Island, where I intend stopping for a few days. We shall from there go on direct to the Behring Strait and Japan. Our prospects of success are as genial as possible. All well on board. The vessel is in splendid condition, and our coal supply sufficient.

"A. E. N.

"To Oscar Dickson, Esq., Gothenburg (Sweden)."

The above letter appeared in the columns of the *Standard* on the 26th December, 1878, making public the good tidings at a time when we ourselves were undergoing, on a small scale, the severities of an unusually cold season. But I much fear that the hopes of successfully accomplishing the great feat without an enforced sojourn in the Frozen Ocean will be disappointed. News has reached Stockholm from San Francisco to the effect that a steamer, seeming to answer in description to the "Vega," is ice-bound at a point about twenty miles north-west of East Cape. Such an event was not wholly unlooked-for, and as the party has provisions in plenty no apprehensions need be entertained concerning their

safety ; indeed, the interests of science are likely to be materially advanced by the observations of the gallant Professor and his staff during their imprisonment. It is by no means unlikely that communication will be established through the agency of the hardy natives directly the ice is strong enough to bear dogs and sledges. These people are very friendly with the crews of the American whalers that resort to St. Lawrence Bay, and are likely to do all in their power to assist the explorers ; but they are well acquainted with every ship that has called there, distinguishing one from the other whilst still at a considerable distance from land. Their report of a strange steamer seems to point unmistakably to the vessel carrying Professor Nordenskiöld and his fortunes. Any day may bring us certain news concerning the expedition, but at the moment I pen these final words a degree of uncertainty—though no anxiety—prevails amongst those who have followed the onward progress of the gallant Scandinavian.

FINIS.

P.S.—Whilst these sheets were passing through the press a letter from Professor Nordenskiöld reached Europe, confirming his detention in the Frozen Ocean, at a point some hundred miles distant from Behring Strait. Prompt measures are being instituted to afford him relief on the breaking up of the ice. He reports all well “on board the ‘Vega.’”

13th June, 1879.

INDEX.

- Albasin, 130.
Abuti, 19.
 Alluvial Formations, 49, 50.
 Altai Range, *see* Mountains.
 Amethysts, 54.
 Amur River, 26.
 " " Acquirement of, by
 Russia, 28.
 Amur Territory, 26.
 " " Boundaries of, 29.
 Anadyr River, 39.
 Angara, Plain of Lower, 15.
 Angara River, 40.
 Anossof, General, 246.
 Aqua marina, 57.
 Argali, 62.
Aruigui, 187, 191.
 Ash, Mountain, 113.

 Baidarata Gulf Surveyed, 263.
 Baikal, Lake, 17, 40.
 " " *Golomai* of, 95.
Balagan, 230.
Barabán, 202.
 Barantchinsk, 246.
 Barentz, 252.
 Barnaul, Silver Mines at, 55.
 Bear, 63.
 Bear and Cossack, 67.
 Bearcoote Eagle, 94.
 Beaver, 61.
 Behring, 253.
 Beryl, 54.
 Beverages, 113, 187, 191, 199.
 Bird-cherry, 112.
 Blackcock, 93.
 Blankets, White Birch, 113.
 Boundaries, 9.
 Bows, Ostiak, 144.
 Buddhism, 160.

 Buriates, 157 to 168.
 " Legend, 112.

 Caravans, Establishment of, 120,
 132.
 Cards, 181.
 Carnivora, 60, 63.
 Carpet Factory, 247.
 Carriage Factory, 247.
 Castoreum, 61.
 Cavern Dwellings, 156.
 Cedar, 110.
 Central Siberia, 14.
 Cereals, 115.
 Castings, Iron, 246.
 Chalcedony, 54.
 Chess, 181.
 Climate, 116, 117.
 Cloth Factory, 247.
 Clothing, Fish-skin, 142.
 Columns, Jasper, 248.
 Conversion of Yakuts, 191.
 Cossacks, 7.
 Cows Eating Fish, 95.
 Creeping Pine, 112.
 Cruelty, Kirghiz, 157.
 Crystalline Formations, 41, 43,
 44.

Dalai Lama, 160.
 Damascene Work, 246.
 Dances, Koriak, 206.
 Deities, Ostiak, 150.
 Demidof, Prince, 55, 245.
 "Diana," Voyage of, to Gulf of
 Obi, 259.
 Dickson, Mr. Oscar, fits out the
 "Proven," 281; fits out the
 "Ymer," 288; fits out the
 "Vega," 292.

- Distilleries, 249.
 Divisions, Political, 241 to 243.
 Docility of Yakuts, 193.
 Dockyards, 249.
 Dogs Catching Fish, 95.
 Dwellings, Gilak, 184.
 " Kirghiz, 156.
 Eastern Siberia, 16.
 " " Drainage of, 18.
 " " Mountains of, 19.
 Ekaterinburg, 54, 245.
 Elk, 63.
 Enieralds, 57.
 Ermann, M., 254.
 Explorations, Recent, 250 to 315.
 Extinction of Native Races, 216,
 249.
 Falconry, 94.
 Fauna, 59 to 109.
 Fennel, Giant, 114.
 Finsch, Dr. Otto, German Ex-
 pedition under, 290.
 Fish-skin Clothing, 142.
 Flora, 110 to 115.
 Folk Lore, 217 to 240.
 Forest Fires, 111.
 Fossil Ivory, 104.
 Fungus, 152, 199.
 Furs, Monopoly Abolished, 133.
 Gadfly, 80.
 Gardiner, Mr., 262.
 Gardiner's Haven, 263.
 Geographical Features, 5 to 29.
 Geology, 41 to 53.
 Geology of Altaï, 34.
 " " Ural, 32.
 German Expedition under Dr.
 Finsch, 290.
 Gilaks, 182.
 Ginseng, 115.
 Glass Works, 247.
 Gloves, 140.
 Gluttony, Tungoose, 172.
 Goat-hair Carpets, 247.
 Golcheeka, 277, 280.
Golomai, 95.
Golorvi, 192.
 Governments, 241 to 243.
 Graphite, *see* Plumbago.
 Great Bear, The, Ostiak Clock,
 152.
 Great Northern Plain, 12.
 " " " Geology of,
 41.
 Greek Church, 10.
 Gulf Stream, 258, 263, 285.
 Gunpowder, 246.
Gûs, 141.
 Hedenström, 210, 254.
 Herds, Reindeer, 207.
 Herrings, 87.
 Heuglin, Von, 255.
 Hippophagy, 156, 186.
 Historical Sketch, 118 to 134.
 Honesty, Ostiak, 154.
 " Tungoose, 170.
 " Yukagire, 210.
 Hunting, 174, 209.
 Ichthyology and Ornithology, 86
 to 95.
 Igneous and Volcanic Rocks, 50
 to 53.
 Improvidence, Tungoose, 170.
 Independence, Koriak, 196.
 Iron, Magnetic, 245.
 Iron Manufactories, 244, 246.
 Isle of Bones, 105.
 Ivory, Fossil, 104, 213, 248, 253.
 Jasper, 54, 247.
 Jew Taxidermist, 269.
 Jews, 249.
 Johannessen, Captain, Circum-
 navigates Novaia Zemlia,
 281.
 Kamtchadales, 213 to 216.

- Kamtchatka, Annexation of, 134.
 " Climate of, 25.
 " Geographical Description of, 23.
 Kamtchatka, Coast of, 24.
 " Inhabitants of, 26.
 " Rivers of, 25.
 " Volcanoes of, 12.
 Kaslinsk, 246.
Khomba Lama, 163.
 Kiachta, Treaty of, 133.
 Kiansk, 247.
 Kidnapping, 156.
 Kirghiz, 155 to 157.
 Kolyvan, 248.
Kookhlanka, 201.
 Korgon Table Land, 33.
 Koriaks and Tschuktschis, 193 to 208.
 Koriakof, 246.
 Krasnoslobodsk (?), 246.
 Krasnoiarsk, 247.
 Kureika, Wiggins' Winter Quarters, 265.
 Kutchum Khan, 120.
 Lachof, 253.
 Lackered Work, 245.
 Lakes, 39, 40.
 " Dry, 19.
 Lapidaries, 55, 245.
 Lapis lazuli, 57, 248.
 Larch, 111.
 Lead, 56.
 Lena River, 38.
 Lime Bast, 112.
 Linen Manufactories, 247.
 Lotka, Gilak, 182.
Malachi, 169.
 Malachite, 55, 245.
Malitza, 140.
 Mammoth, Siberian, 95 to 109, 272.
 Manufactures, 244 to 249.
Manyalla, 201.
 Marriage Custom, 187, 199.
 Matochkin Shar, Von Heuglin Route by, 255.
 Medicines, 61.
 Mica, 248.
 Middendorf, 254.
 Mineralogy, 54 to 58.
 Mines, Barnaul, 55.
 " Ekaterinburg, 54.
 " Nerchinsk, 56.
 " Regulations regarding 57.
 Mountains, Altaï, 32, 34.
 " Ural, 30, 31.
 Mosquitoes, 79, 278.
Muck-a-Moor, 199.
 Music, Ostiak, 153.
 Musk Deer, 61.
Nalifka, 113.
 Napkins, Larch-wood, 111, 152.
 Native Races, 135 to 216.
 Neviansk, 244.
Neplúi, 140.
 Nerchinsk, Mines at, 56.
 " Treaty of, 131.
 Nettles, 113, 138.
 New Siberia, 105, 253.
 Nitre, 246.
 Nordenskiöld, Professor, 281 to 315; Voyage in the "Pröven," 282; Reaches Yenisei, 287; "Pröven" returns to Norway, 287; Returns by Yeniseisk, 288; Voyage in the "Ymer," 288; Sails with "Vega" and "Lena," 292; Doubles Cape Tscheljuskin, 293; "Lena" parts company, 314; Last heard of, 314.
 Novaia Zemlia Circumnavigated by Johannessen, 281.
 Nuts, Cedar, 111.
 Obi River, 35.
 Oka, 248.
 "Old Sable Iron," 246.
 Olekminsk, 246.

- Omsk, 247.
 Ordnance Manufactory, 246.
 Ornithology and Ichthyology, 86
 to 95.
 Ostiaks, 138 to 155.
 Otter, Sea, 60.

 Paper Works, 247.
Park, 141.
Peshki, 139.
 Platinum, 54, 245.
 Plumbago, 248, 264.
 Political Divisions, 241 to 243.
Polog, 197.
 Poplar, 113.
 Porcelain Factory, 247.
 Ports, Want of, 249.
 Premium offered by M. Sideroff,
 256.
 Primary Stratifications, 44 to 47.
Promysle, 175, 251.

 Quarries, 247, 248.
Quass, 114.
 Quicksilver, 57
 " Freezing, 116.

 Races, Native, 135 to 216.
 Recent Explorations, 250 to 315.
 Reindeer, 79, 178, 207, 209.
 Rifles, Siberian, 79, 175, 177,
 244.
 Rivers, 34 to 39.
 Rodentia, 61.
 Routes, Sea, to Siberia, 254.
 Ruminantia, 61.
 Russia, Civilising Influence of, 10.

 Sakalin, Island of, 26.
 Sal-ammoniac, 61.
 Salmon, 91.
 Salt Works, 246.
 Samöeide Idols, 287.
 Samöeides, 211 to 213.
Sanayakh, 186.
 Scope of Volume, 5.

 Scurvy, Mr. Seeböhm's Observa-
 tions on, 272.
 Seals, 88.
 Secondary Series, 47.
 Seeböhm, Mr. H., 268 to 281.
 Shamanism, 137, 145, 166, 192,
 198, 213.
 Ship-building, 248.
 Siberia, Central, 14.
 " Eastern, 16.
 " " Drainage of, 18.
 " " Mountains of, 19.
 Siberia, Popular Opinion concern-
 ing, 7.
 Siberia, Extent of, 11.
 " Importance of, 8.
 " Interest awakened in, 9.
 " Surface Features of, 11.
 " Western, 13.
 Siberian Exiles, 56.
 " Mammoth, 95 to 109,
 272.
 Siberian Rifles, 79, 175, 177,
 244.
 Sibir, 123.
 Sibiriakof, M., 262, 288, 292.
 Sibiriakof's Island, 263.
 Siderof, M., 256.
 Snipe, 93.
 Snuff, 152.
 Soap Works, 247.
 Spirits, 249.
 Steppes, Flora of, 114.
 Steel, Yakut, 189.
 Sterlet, 90.
 Stroganof, Anika, 118.
 " Maxim, 120.
 Sturgeon, 87, 90, 143.
 Superstition, Buriate, 167.
 " Gilak, 183.
 " Kamitchadal, 215.
 " Koriak, 199, 208.
 " Ostiak, 75, 145, 152,
 154.
 Swan's Down Trade, 247.

 Tagilsk, 244.

- Talc, 248.
 Tanneries, 247.
 Tchernoiotchinsk, 246.
 Talma, 247.
 "Thames," Voyage of the, 262.
 " Loss of, 278.
 Tigers, 81.
 Timber on Yenisei, 269.
 Tin, 56, 190.
 Tinder Bags, 160.
 Tiumen, 247.
 Tobacco, 209.
 Tobolsk Tanneries, 247.
Toion, 195.
 Tomsk Founded, 129.
 Topaz, 54.
Torbasa, 186.
 Trade and Manufactures, 244 to 249.
 Transition Series, 44 to 47.
 Trapping, 176.
 Tscheljuskin, Cape, Doubled by Nordenskiöld, 293.
 Tschuktschis and Koriaks, 193 to 208.
 Tundras, Dazzling Snow on, 21.
 Tundras, Description of, 20.
 " Flora of, 114.
 Tungoses, 168 to 182, 193.
 Ural Range, *see* Mountains.
 Ust-Kutsk, 246.
 "Vega," Voyage of the, 292 to 315.
 Veil, 139, 142.
 Vitim, 248.
 Vladivostock, 249.
 Voguls, 136.
 Volcanic and Igneous Formations, 50 to 53.
 Volcanoes, Kamtchatkan, 12.
 Walrus, 88.
 Western Siberia, 13.
 Wiggins, Captain, 256 to 281;
 Views on Siberian Trade, 256, 258; First Voyage in the "Diana," 259; Second Attempt, 261; Third Voyage in the "Thames," 262; Reaches Yenisei, 264; Lays up Ship at Kureika, 266; Proceeds to England, 267; Returns to Kureika, 273; Ice Breaks up, 274; "Thames" Lost, 278; Returns to England overland, 279.
 Willoughby, Sir Hugh, 252.
 Windows, Fish-skin, 142.
 " Mica, 248.
 Wolves, 75.
 Wrangel, Baron, 254.
 Yakuts, 185 to 193.
 " Conversion of, 191.
 " Docility of, 193.
Yassak, 137, 214.
 Yenisei River, 37; Nordenskiöld reaches the Yenisei, 261; Reached by Wiggins, 264; Breaking up of Ice described by Mr. Seebohm, 272; Mr. Seebohm's Views on the Yenisei Trade, 280.
 Yenisei, Vale of, 15.
 Yeniseisk, Visited by Wiggins, 267.
 Yermac Timofeeff, 120.
 " Death of, 127.
 Yukagires, 208 to 211.
Yurts, Buriate, 159.
 " Koriak, 196.
 " Ostiak, 142.
 " Vogul, 136.
 " Tungoose, 169.
 " Yakut, 185.
 Zircon, 57.
 Zlataoust, 246.

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